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# **Web Analytics strategy: a model for adopting and implementing advanced Web Analytics**

A Doctoral Thesis

Department of Information systems  
University of Cape Town

Presented

By

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For

The Degree of Doctor of Philosophy

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## Declaration

I **Sibongiseni Thomasia Dakela** (full name)

hereby declare that:

This thesis is my own unaided work, both in concept and execution, and that apart from the normal guidance from my supervisor and my co-supervisors; I have received no other research content assistance. Neither the substance nor any part of the thesis has been submitted in the past, or is being, or is to be submitted for a degree at this university or at any other university.

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DATE: 07<sup>th</sup> November 2011

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## Dedication

I dedicate this thesis to my late father Elliot Tunzelana who passed away at the age of 80 in May 2011; and my brother Phumzile Tunzelana who passed away at the age of seventeen in January 1993. I also dedicate this thesis to Professor Dewald Roode who co-supervised this study until he passed away in 2009. May their souls rest in peace.

University of Cape Town

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# WEB ANALYTICS STRATEGY: A MODEL FOR ADOPTING AND IMPLEMENTING ADVANCED WEB ANALYTICS

## Abstract

Web Analytics (WA) is an evaluative technique originating from and driven by the business world in its need to get more value out of understanding the usage of its Web sites and strategies therein. It is the measurement, collection, analysis and reporting of Internet data for the purposes of understanding and optimising Web usage for the online visitor, the online customer and the business with Web site presence. Yet there is limited literature that addresses the association of Web metrics and; planned decision making and the current Web Analytics (WA) practice is criticised because it involves mostly raw statistics and therefore the practice tends to be inconsistent and misleading. There are also a number of key challenges with Web Analytics that should be recognised and accounted for both before and after implementation.

The objective of this research study is to propose an appropriate model and guidelines for a Web Analytics adoption and implementation in an electronic commerce (e-commerce) organisation dealing with online marketing, especially small, medium enterprises (SMEs). Using grounded action research, personal observations and a review of online references, the study reviews the current state of Web Analytics (WA). This review is conducted in an organisation based in the United Kingdom (UK) with offices both in South Africa (SA) and in the United Kingdom (UK). The generalisation of the proposed model is conducted in a South African organisation. The other-setting generalisation is conducted at an international organisation based in South Africa, Cape Town. The study notes that Web Analytics (WA) is still in its infancy in South Africa compared to the United Kingdom where works part of the virtual team. The South African online marketing community may be keen to critique and trial the findings of this study. The study highlights the crucial role of people engaged in Web Analytics (WA) that is sometimes overlooked. The paper proposes a Web Analytics (WA) domain model, a Web Analytics (WA) process model and guidelines which could be used in further studies and in organisations adopting and implementing Web Analytics.



# **ICEBO NGOPHICOTHQ-QHAGAMSHELWANO LWELIZWE LONKE: I MODEL I YOKWAMKELA NOKUSEBENZISA UPHICOTHQ-QHAGAMSHELWANO LWELIZWE LONKE NGETEKNOLOJI**

## **Isishwankathelo**

Icebo ngophicothq-qhagamshelwano lwelizwe lonke: I modeli yokwamkela nokusebenzisa uphicothq-qhagamshelwano lwelizwe lonke ngeteknoloji oluphambili kwicandelo loqinisekiso labucala kwisisekelo kwezempilo. UPhicothq-qhagamshelwano lwelizwe lonke ngeteknoloji (Web Analytics) yindlela yokuqikelela esuka neqhutywa zezoshishino ngenjongo zokufumana ixabiso ekuqondeni nasekusebenziseni amazikwana ngamazikwana oqhagamshelwano ngeteknoloji (Web sites) neendlela ezithile ezisebenza ngazo ezikuwo. Ngumlinganiselo, ingqukelela, uphicothq, noniko nophalazo-ngxelo ngolwazi oluvela kwi-intanethi (Internet) ngenjongo zokuqonda nokuqonda nokuqhubeka phambili usetyenziso loluqhagamshelwano lwelizwe lonke kusenzelwa umndwendweli umceli nkonzonoshishino esebenzisa ubukho bala mazikwana ngamazikwana eteknoloji.

Eyona nto iyingxaki kukuba lunqongophele uluncwadi oluthetha ngequmrhu lomlinganiselo woluqhagamshelwano (Web metrics) nothatyathozigqibo oluqulungqiweyo kanti ke oluphicothq-qhagamshelwano lukhoyo (current Web Analytics) lusetyenziswa kutsha nje lusajongene nogxeko ngenxo yosetyenziso lwamanani angangqinisiswanga (raw statistics). Ke ngoko olusetyenziso lwalo alukazinzi lwaye lunganolahlekiso xa ungekaluqondi. Zisezininzi iziceli-mngeni kuPhicothq-qhagamshelwano lwelizwe lonke ekusafuneka ziqondisiswe zize zicacisiswe phambi nasemva kokusetyenziswa kwalo.

Injongo ephambili ngoluphando kukecebisa ngeyona modeli (model) nesikhokelo malunga nolwamkelo nosetyenziso loluPhicotho-qhagamshelwano lwelizwe lonke kushishino lweteknoloji (electronic commerce/e-commerce) ukuqulunqa nokusebenza ngorhWebo noqhagamshelwano ngeteknoloji ngakumbi kumashishini amancinci naphakathi (small, medium enterprises). Ngosetyenziso lophando olumilileyo, nangokuzibonela nokwakho nangokuzifundela kuluncwadi usebenzisa uqhagamshelwano neteknoloji, esi sifundo sijongene nemeko yangoku yoPhicotho-qhagamshelwano.

Olu qwalaselo lwesi sifundo lwenziwa kwiziko elise United Kingdom (UK) olunee-ofisi apho naseMzantsi-Afrika. Esi sifundo sisakuphinda sivavanywe kwelinye iziko elise Mzantsi-Afrika ukubonakalisa uquko. Kuza kuphinda kukhangelwe ithuba lokuvavanya esi sifundo na kwelinye iziko elise Kapa, eMzantsi-Afrika olunee-ofisi nakwamanye amazwe ngaphandle koMzantsi-Afrika ukwenzela uquko. Esi sifundo sifumanisa ukuba uPhicotho-qhagamshelwano (Web Analytics) luselutsha apha eMzantsi Afrika xa kunokuthelekiswa nezinga lase UK apho iqela elikhulu elinobu buchwephetshe lusebenza khona. Uluntu loMzantsi-Afrika kwezentengiso lusenokuba nomdla ekuncomeni begxeka bade bazivavanye ezi zimvo ezi kwesi sifundo. Isifundo esi sibabaza inxaxheba ebalulekileyo yabantu abasebelusebenzisa oluPhicotho-qhagamshelwano nxaxheba leyo esoloko ingajongelwanga ntweni kumaxesha ngamaxesha. Lo msebenzi ucebisa nge modeli yoPhicotho-qhagamshelwano nezikhokelo ezisonokukusetyenziselwa ukuncedisa kwezinye ezi zifundo kumaqumrhu afuna ukuluthatha alusebenzise oluPhicotho-qhagamshelwano.

## TABLE OF CONTENTS

|   |            |
|---|------------|
| <b>Declaration.....</b>   | <b>ii</b>  |
| <b>Acknowledgements.....</b>  | <b>iii</b> |
| <b>Dedication.....</b>  | <b>iv</b>  |
| <b>Peer-Reviewed Research Output.....</b>   | <b>v</b>   |
| <b>Abstract.....</b>  | <b>vii</b> |
| <b>1 INTRODUCTION.....</b>  | <b>8</b>   |
| 1.1 Background to the study .....   | 9          |
| 1.1.1 Description of Web Analytics .....  | 10         |
| 1.1.2 A brief history of Web Analytics .....  | 11         |
| 1.2 Justification and motivation for this research .....                              | 12         |
| 1.3 Problem statement and problem description.....                                    | 13         |
| 1.4 Research questions .....  | 15         |
| 1.4.1 Primary research questions .....  | 15         |
| 1.5 Significance of this research and contribution that may be made .....             | 15         |
| 1.6 Qualitative Research Design.....  | 17         |
| 1.6.1 Data collection .....   | 17         |
| 1.6.2 Data analysis .....   | 18         |
| 1.7 Generalisability for the study.....   | 19         |
| 1.8 Expected achievement at the end of the study .....                                | 20         |
| 1.9 Format of the thesis .....  | 20         |
| 1.10 Summary.....   | 22         |
| <b>2 OVERVIEW OF THE LITERATURE .....</b>   | <b>26</b>  |
| 2.1 Introduction .....  | 26         |
| 2.2 Positioning Web Analytics in Information Systems .....                            | 27         |
| 2.2.1 Positioning Web Analytics in Information Technology Adoption and Diffusion..... | 27         |
| 2.2.2 Positioning Web Analytics in Decision Support Systems.....                      | 30         |
| 2.3 Web sites and Web Analytics.....  | 34         |
| 2.3.1 Definitions of e-commerce and e-business .....                                  | 35         |
| 2.3.2 E-commerce and Web Analytics relevance .....                                    | 39         |
| 2.4 Practices, challenges and people in Web Analytics .....                           | 40         |

|          |  |           |
|----------|--|-----------|
| 2.4.1    | The importance of Web Analytics in practice .....                      | 40        |
| 2.4.2    | Practices of Web Analytics .....                                       | 42        |
| 2.4.3    | Technology challenges of Web Analytics.....                            | 44        |
| 2.4.3.1  | Site complexity .....  | 44        |
| 2.4.3.2  | Technology and training .....  | 45        |
| 2.4.3.3  | Metrics.....   | 45        |
| 2.4.3.4  | Data integrity and quality .....                                       | 45        |
| 2.4.4    | Organisational adoption challenges .....                               | 45        |
| 2.4.4.1  | Challenges of management in an e-commerce organisation .....           | 47        |
| 2.4.5    | Implementation challenges .....  | 47        |
| 2.4.6    | Human element involved in Web Analytics .....                          | 48        |
| 2.4.6.1  | Identify key stakeholders .....  | 48        |
| 2.4.6.2  | Identify the most important Web site visitors .....                    | 49        |
| 2.4.6.3  | Hire and empower a full-time Web Analyst and a Webmaster .....         | 49        |
| 2.4.6.4  | Resources .....  | 50        |
| 2.4.6.5  | Politics .....   | 50        |
| 2.4.6.6  | Negative attitudes.....  | 50        |
| 2.4.6.7  | Lack of IT knowledge and expertise .....                               | 51        |
| 2.4.6.8  | Resistance to change.....  | 52        |
| 2.4.6.9  | Lack of management commitment .....                                    | 52        |
| 2.5      | Web Analytics in South Africa (SA).....                                | 52        |
| 2.6      | Background to the observations made.....                               | 54        |
| 2.7      | Observations of the South African (SA) Web Analytics environment ..... | 54        |
| 2.8      | Web Analytics in the United Kingdom (UK).....                          | 56        |
| 2.9      | Comparison between South African and the United Kingdom Web Analytics  | 56        |
| 2.10     | The importance of Web Analytics in research.....                       | 57        |
| 2.11     | Theoretical themes.....  | 57        |
| 2.11.1   | A Web Analytics mind map for an e-commerce Web site .....              | 58        |
| 2.12     | Summary.....   | 61        |
| <b>3</b> | <b>RESEARCH DESIGN .....</b>   | <b>65</b> |
| 3.1      | Introduction .....   | 65        |
| 3.2      | Contextual factors impacting on Research Design.....                   | 66        |
| 3.3      | Philosophical assumptions.....   | 70        |
| 3.3.1    | Ontological assumptions.....   | 70        |

|         |  |     |
|---------|--|-----|
| 3.3.2   | Epistemological assumptions.....   | 71  |
| 3.3.3   | Assumptions regarding human nature .....   | 72  |
| 3.3.4   | Methodological assumptions.....  | 73  |
| 3.3.5   | Research paradigms.....  | 73  |
| 3.4     | Topic area of interest .....   | 75  |
| 3.4.1   | Description of Web Analytics .....   | 75  |
| 3.4.2   | Importance of Web Analytics .....  | 75  |
| 3.4.3   | Persistent problem statement and goals of research .....                                 | 76  |
| 3.5     | Idea Context.....  | 76  |
| 3.5.1   | Personal experience in the Online Analytics division – in the previous organisation..... | 77  |
| 3.5.2   | Selection of an organisation for the study – current organisation.....                   | 79  |
| 3.6     | Methods .....  | 81  |
| 3.6.1   | Action research .....  | 82  |
| 3.6.2   | Grounded theory .....  | 84  |
| 3.6.3   | Grounded action research selected for the study over other methods.....                  | 87  |
| 3.6.4   | Data collection .....  | 88  |
| 3.6.4.1 | Background to data collection in the first case organization .....                       | 89  |
| 3.6.4.2 | Background to data collection in the second case organization .....                      | 95  |
| 3.6.4.3 | Background of business owners and Web Analytics experts .....                            | 96  |
| 3.6.4.4 | Primary data sources .....   | 99  |
| 3.6.4.5 | Secondary data sources.....  | 103 |
| 3.6.5   | Data Analysis.....   | 103 |
| 3.6.5.1 | Open Coding .....  | 105 |
| 3.6.5.2 | Axial Coding .....   | 106 |
| 3.6.5.3 | Selective Coding .....   | 107 |
| 3.6.5.4 | HyperRESEARCH 2.81 Software.....   | 107 |
| 3.7     | Role of the researcher.....  | 108 |
| 3.8     | Bias in research .....   | 110 |
| 3.9     | Research question formulation .....  | 110 |
| 3.9.1   | Broad categories identified from literature sensitivity .....                            | 110 |
| 3.9.2   | Organisation.....  | 111 |
| 3.9.3   | Adoption and / or Implementation .....   | 111 |
| 3.9.4   | Challenges .....   | 112 |
| 3.9.5   | Practice .....   | 112 |

|          |  |            |
|----------|--|------------|
| 3.9.6    | People.....  | 113        |
| 3.9.1    | Primary research question .....                                      | 113        |
| 3.9.2    | Secondary research question .....                                    | 113        |
| 3.10     | Role of Human Subjects and Ethics in Social Science Research .....   | 114        |
| 3.11     | Generalisability .....   | 114        |
| 3.12     | Credibility and dependability .....                                  | 120        |
| 3.13     | An overview of action research .....                                 | 120        |
| 3.13.1   | Initiation .....   | 123        |
| 3.13.2   | First iteration .....  | 123        |
| 3.13.3   | Second iteration .....   | 124        |
| 3.13.4   | Third iteration .....  | 125        |
| 3.13.5   | Fourth iteration.....  | 125        |
| 3.14     | Summary.....   | 128        |
| <b>4</b> | <b>RESEARCH RESULTS AND INTERPRETATION OF RESULTS.....</b>           | <b>130</b> |
| 4.1      | Introduction .....   | 130        |
| 4.2      | Memo-ing .....   | 131        |
| 4.3      | Intervention diagnosis .....   | 131        |
| 4.4      | Action planning .....  | 132        |
| 4.5      | Action taking and participatory observations.....                    | 133        |
| 4.6      | Outcome .....  | 135        |
| 4.7      | Stipulation of iterative learning .....                              | 135        |
| 4.8      | Analysis of grounded action research .....                           | 135        |
| 4.9      | A discussion of guidelines for minimising WA problems .....          | 160        |
| 4.10     | Collapsed categories for the study, after the fourth iteration ..... | 168        |
| 4.10.1   | Programme Change Management.....                                     | 170        |
| 4.10.2   | Management Information .....   | 176        |
| 4.10.3   | Knowledge Management .....   | 177        |
| 4.10.4   | Web Analytics .....  | 178        |
| 4.10.5   | Customer Experience .....  | 181        |
| 4.10.6   | Problems.....  | 182        |
| 4.10.7   | Innovation .....   | 185        |
| 4.10.8   | Internal and external business relationships .....                   | 186        |
| 4.11     | Links and relationships for the core categories .....                | 187        |
| 4.12     | Illustration of the study .....                                      | 188        |
| 4.13     | HyperRESEARCH analysis report .....                                  | 191        |

|  |  |            |
|--|--|------------|
| 4.14   | Adoption models and Web Analytics models .....               | 194        |
| 4.15.1   | E-business and e-commerce adoption models .....              | 194        |
| 4.15.2   | Existing Web Analytics process models or frameworks .....    | 199        |
| 4.15.3   | Gaps in the existing models .....                            | 202        |
| 4.16   | An expansion and an evolution of the model .....             | 205        |
| 4.17   | Interpretation of the proposed model .....                   | 206        |
| 4.18   | Generalisability .....                                       | 212        |
| 4.18.1   | Member checking.....   | 212        |
| 4.18.2.1   | Feedback from business owners and Web Analytics experts..... | 213        |
| 4.19   | Summary.....   | 218        |
| <b>5</b>   | <b>EVALUATION AND CONCLUSION .....</b>                       | <b>221</b> |
| 5.1  | Introduction .....   | 221        |
| 5.2  | Overview of the research and thesis summary .....            | 221        |
| 5.2.1  | Review of chapters .....                                     | 221        |
| 5.2.2  | Thesis summary and discussions .....                         | 223        |
| 5.3  | Credibility and dependability .....                          | 232        |
| 5.3.1  | An audit trail .....   | 232        |
| 5.3.2  | Member checking.....   | 233        |
| 5.4  | Revisiting the research questions .....                      | 235        |
| 5.4.1  | Primary research question .....                              | 235        |
| 5.4.2  | Secondary research question .....                            | 237        |
| 5.5  | Research contributions .....                                 | 242        |
| 5.5.1  | Theoretical contributions.....                               | 242        |
| 5.5.2  | Methodological contributions .....                           | 243        |
| 5.5.3  | Practical contributions.....                                 | 243        |
| 5.5.4  | Applicability of models .....                                | 245        |
| 5.6  | Assessment of the research.....                              | 245        |
| 5.6.1  | Evaluative criteria proposed by Klein and Myers .....        | 245        |
| 5.7  | Limitation of the research.....                              | 249        |
| 5.8  | Opportunities for further research .....                     | 251        |
| 5.9  | Summary.....   | 252        |
| <b>6</b>   | <b>Appendices.....</b>                                       | <b>253</b> |
| <b>APPENDIX A-1: Vendor Listing (Lund, 2006) – Table 1: Web Analytics products</b> |  |            |
| <b>253</b>   |  |            |

---

|  |            |
|--|------------|
| <b>APPENDIX A-2: Table 2: Pricing and Support times (Marketing Sherpa, 2006)</b>                     |            |
| <b>258</b>   |            |
| <b>APPENDIX A-3: Vendor comparison – Table 3: Pricing and cost information (E-consultancy, 2008)</b> | <b>259</b> |
| <b>APPENDIX A-4: Vendor comparison – Table 4: Key decision criteria</b>                              | <b>266</b> |
| <b>APPENDIX B: INTERVIEW QUESTIONS</b>   | <b>267</b> |
| <b>APPENDIX C: ONLINE MI STEERING COMMITTEE SUMMARY</b>  | <b>270</b> |
| <b>APPENDIX D: MEMOS</b>   | <b>273</b> |
| <b>APPENDIX E: THE RESEARCHER’S EXPERIENCE IN ANALYTICS AND INFORMATION TECHNOLOGY</b>               | <b>277</b> |
| <b>APPENDIX F: REQUIREMENTS FOR A WEB ANALYTICS SOLUTION FOR ANALYTIX TRAILBLAZER INC.</b>           | <b>281</b> |
| <b>APPENDIX G: QUESTIONS FOR BUSINESS OWNERS AND WEB ANALYTICS EXPERTS</b>                           | <b>282</b> |
| <b>7 References</b>  | <b>290</b> |
| <b>Glossary</b>  | <b>307</b> |



## CHAPTER ONE

|          |   |          |
|----------|---|----------|
| <b>1</b> | <b>INTRODUCTION.....</b>  | <b>8</b> |
| 1.1      | Background to the study .....   | 9        |
| 1.1.1    | Description of Web Analytics .....                                    | 10       |
| 1.1.2    | A brief history of Web Analytics .....                                | 11       |
| 1.2      | Justification and motivation for this research .....                  | 12       |
| 1.3      | Problem statement and problem description.....                        | 13       |
| 1.4      | Research questions .....  | 15       |
| 1.4.1    | Primary research questions .....                                      | 15       |
| 1.5      | Significance of this research and contribution that may be made ..... | 15       |
| 1.6      | Qualitative Research Design.....                                      | 17       |
| 1.6.1    | Data collection .....   | 17       |
| 1.6.2    | Data analysis .....   | 18       |
| 1.7      | Generalisability for the study.....                                   | 19       |
| 1.8      | Expected achievement at the end of the study .....                    | 20       |
| 1.9      | Format of the thesis .....  | 20       |
| 1.10     | Summary.....  | 22       |

# 1 INTRODUCTION

This introduction provides some background to Web Analytics (WA). It consists of a description of Web Analytics, and a brief history of Web Analytics. A justification and motivation for doing this research is described and explored. There are different types of Web sites. For the purposes of this study, however an electronic (e-commerce) Web site will be highlighted. In an electronic commerce (e-commerce) context that is primarily for converting and retaining customers, Web Analytics may assist to improve service. The lack of Web Analytics peer-reviewed research, suitable practice, Web Analytics adoption frameworks and Web Analytics implementation frameworks are seen as important requirements and challenges that this research proposes to address.

Next the problem statement and problem description are explained, followed by the high-level research questions for the study. The significance of the study is described and explored. The study intends to add valuable insights in the area of Web Analytics, especially to the South African online marketing community. The study intends to highlight practical issues with regard to the roles of people. These issues are sometimes not clarified in an online marketing environment. The study also includes challenges in Web Analytics and a recommended Web Analytics strategy. The study will inform those electronic businesses (e-businesses), interested in investing in Web Analytics, about its important aspects.

Research design and analysis, which is the heart of the study, is outlined here and will be explored in-depth in chapter three. Research design, in a qualitative study, entails:

- the expansion and amendment assumption
- data gathering and data analysis
- clarification and refocusing of research questions
- generalisability
- bias declaration
- the discovery of credibility and dependability risks.

These components of qualitative research design are, more often than not, taking place relatively concurrently and each impacts on the others. This practice is not sufficiently illustrated in a series, even one that allows iteration, because in qualitative research there is a limited regular sequence in which diverse components or undertakings must be illustrated.

The expected achievement at the end of the study and the format of the thesis conclude chapter one. The next section positions Web Analytics within information systems (IS) and gives definitions of the subject area within this study from a peer-reviewed, academic point of view.

### **1.1 Background to the study**

The positioning of the Web Analytics research within Information Technology (IT) adoption and within DSS is debatable. Web Analytics as a technology and discipline can be regarded as belonging within DSS, but the thesis discusses Web Analytics from the introduction, adoption and use of WA in an organisational setting. Thus, the research is more aptly positioned in the diffusion and adoption of technology body of knowledge.

There are various types of information systems such as customer relationships management, decision support systems, knowledge management systems, expert systems, enterprise applications, supply chain management and executive information systems (Carvalho & Ramos, 2006; Filip, 2007). Decision support systems (DSS) is an area of the information systems (IS) discipline, which is focused on supporting and improving managerial decision-making (Arnott & Pervan, 2008; Kou, Shi & Wang, 2010). The current decision support systems (DSS) industry movement of business intelligence (BI) is one of the most optimistic areas of investment (Arnott & Pervan, 2008). Web-based technologies are having a major impact on design, development, and implementation processes for types of decision support systems (DSS) (Bharati & Chaudhury, 2003).

The authors (Bharati & Chaudhury, 2003) further state that Web-based technologies are being utilised for the development of decision support systems (DSS) tools by leading developers of decision support technologies. Web-based information systems are increasingly being used for decision support applications. However, few empirical studies have been conducted on web-based decision support systems (DSS). Dakela & Seymour (2008) suggest that there have been speculations and debates regarding the opinion held by some industry specialists that Web analytics may be a subset of business intelligence (BI).

Organisations that use Web Analytics; find that it feeds into a wider function of the business, which can have a variety of different names including customer insight, Internet marketing, decision support systems (DSS), management information (MI), management information systems (MIS) or business intelligence (BI). Online data is part of the business intelligence picture and it is therefore increasingly important for companies to pull together and analyse data from different sources (Dakela & Seymour, 2008). Other authors (Malarvannan & Ramaswamy, 2010; Harrigan & Bian, 2011) are exploring Web Analytics as a domain of marketing in various studies. Web Analytics can be considered to be a type of decision support systems (DSS) in the context of this study, because Web Analytics is also a computer-based system that supports decision-making activities. In the next section positioning of Web Analytics within a domain or multiple domains will be explored.

### 1.1.1 Description of Web Analytics

The business world and the academic world define Web Analytics similarly. The scholarly world initially defined **Web Analytics (WA)** as an evaluative technique derived from and motivated by the business world in its requirements to get more value out of understanding the usage of its Web sites and strategies therein (Phippen, 2004; Phippen, Sheppard & Furnell, 2004). **Advanced Web Analytics** is perceived as the examination and reporting of Web site usage so that projects can better comprehend complex interactions between Web site visitor actions, and what the Web site offers to influence insights to optimise the Web site for improved customer loyalty and sales (Phippen, 2004; Phippen *et al.*, 2004; Spremic, Jakovic, & Bach, 2008; Bose, 2009).

Current **Web Analytics (WA)** literature (Hassan, Morris & Proberts, 2009; Kaushik, 2009; Waisberg & Kaushik, 2009a; Waisberg & Kaushik, 2009b) define Web Analytics as a science and the art of improving Web sites to increase their profitability by improving the customer's Web site experience. The Web Analytics definition from earlier studies has evolved. The latter definition seems to be similar to the definition of Advanced Web Analytics from some of the first peer-reviewed journal articles on the subject area; however it is not the same. There is more to Web Analytics in current practice than understanding the usage of its Web sites and the strategies contained therein. So Advanced Web Analytics seems to have a meaning similar to that used by the modern day Web Analytics authors, however it goes further.

Advanced Web Analytics is a general term which simply means applying various advanced analytic techniques to data to answer questions or solve problems. It is not a technology in and of itself, but rather, a group of tools that are used in combination with one another to gain information, analyze that information, and predict outcomes and problem solutions (Bose, 2009). Advanced Web Analytics is predictive.

### 1.1.2 A brief history of Web Analytics

The consolidated history of the Web Analytics market, as pointed out by various authors (Patterson, 1999; Maney, 2003; Ballardvale, 2004; Kaushik, 2007; Hassan, Morris & Proberts, 2009; Kaushik, 2009) began in the mid-90s, several years after the invention of the Mosaic browser (January 1993). The Web Analytics market grew from 1995 when the 'Analog' was written by Dr. Stephen Turner who created the first log file analysis program. The program was mostly used by Web Analytics applications. Then Web-counter followed; this was used to provide page counters. After that, there was a commercial Web Analytics package, WebTrends. In 1999, the Web Analytics market was \$141 million, and growing at 200% per annum; in 2000, it reached \$400 million (Ballardvale, 2004). By the end of the decade, three companies were emerging as the Web Analytics triumvirate: Accrue, NetGenesis, and WebTrends. In contrast to these enterprise-class software providers, software providers, such as Coremetrics and WebSideStory looked as if they would be demoted to serving small medium enterprises (SMEs) (Ballardvale, 2004).

The Web Analytics tools available to date since WebTrends have a wide range of pricing models. In 2000, Web Analytics became formally known as a discipline. In 2005, Google Incorporated purchased Urchin and in 2006, Google released Google Analytics – the free, first class Web Analytics tool (Kaushik, 2007; Hassan *et. al.*, 2009; Kaushik, 2009). Having presented some background to the research, it is essential to present the justification for the study. This is covered in the next section.

## 1.2 Justification and motivation for this research

At the core of every business, there should be a need to understand the customer, so that organisations may have effective strategies for customer-centric services. In most cases, customers want organisations with which they do business to improve constantly in quickness, convenience, customisation (personalisation) and value (Kalakota & Robinson, 1999). In an e-commerce context that is primarily for converting and retaining customers, adoption and implementation of Web Analytics, may assist to improve service. Web Analytics tools help e-businesses to measure and understand customer behaviour online; they would therefore measure convenience and personalised service, which are fundamental aspects of customer satisfaction.

It is important to use Web Analytics tools to produce quantitative and qualitative data to illustrate customer behaviour online. The value of Web Analytics lies in translating data into meaningful information for assisting decision-makers to make actionable decisions that are going to support customer-centric online services. The value of Web Analytics is often understated and reduced to merely raw statistics and misleading numbers (Phippen, 2004; Phippen, Sheppard & Furnell, 2004; Weischedel, Matear, & Deans, 2005). Web Analytics is seen to be significant for customer acquisition, customer retention, converting online visitors to repeat visitors, influencing return on investment (ROI), planning and strategising a customer-centric technique for Web site performance (Ballardvale, 2004; Phippen, 2004; Phippen, Sheppard & Furnell, 2004; Peterson, 2004; Sterne, 2004; Kaushik, 2007; Kaushik 2009). Therefore the lack of research and suitable practice and adoption frameworks is seen as an important concern and a challenge that this research proposes to address. The next section presents some key-defining aspects of the research problem.

### 1.3 Problem statement and problem description

As mentioned above in the brief history of Web Analytics, the subject area in this study is still in its infancy and has some complex problems. There is a persistent problem within current Web Analytics practice, which will be addressed in this study.

There has been some criticism of current Web Analytics practice; this criticism focuses mostly on quantitative metrics, and it is perceived as being inconsistent and misleading (Phippen, 2004; Phippen, Sheppard & Furnell, 2004; Weischedel, Matear, & Deans, 2005; Rodden, Hutchinson & Fu, 2010; Voorbij, 2010). In addition to this criticism, there are some challenges that exist in the field of Web Analytics (Phippen, 2004; Phippen et al., 2004; Weischedel et al., 2005; Rodden, Hutchinson & Fu, 2010; Patton & Kaminski, 2010; Harrigan & Bian, 2011). Some of the above-mentioned authors have noted the general lack of available literature on Web metrics and specifically the unavailability of literature that addresses the association of Web metrics and planned decision-making. Additionally, there is a lack of Web Analytics adoption and implementation frameworks.

Developing countries need to do much more than established countries to have a basic platform to embrace e-commerce and Web analytics (Salman, 2004). Obsolete business models of the traditional industrial age, lack of basic automation in place, poor management skills, lack of e-commerce integration in an inefficient supply chain, are acute problems that developing countries must address. Besides, re-engineering demands cohesive and holistic management of three vital vectors – people, process, and technology – and their alignment with corporate strategy. Organisations in developing countries are lagging behind when such a radical transition is needed to embrace e-commerce and Web Analytics. Moreover, macro level factors are acting as further impediments in a widespread unhealthy business environment. Therefore, the potential barriers to the implementation of e-commerce and Web Analytics in developing countries are more deep-seated than they seem to be. Addressing problems of both micro and macro levels simultaneously and cohesively, is not crucial but also the ultimate way for survival (Salman, 2004).

Small, medium and micro enterprises (SMME) make up 98% of EMEA (Europe, Middle East and Africa) companies (Schlenker & Crocker, 2003). They provide employment to 66% of the labour force and generate 54% of the total private sector turnover (Schlenker & Crocker, 2003). Public organisations such as EUROSTAT distinguish between three types of small business: micro-enterprises with one to nine employees, small enterprises with 10-99 employees and medium enterprises with 100-499 employees. This distinction is correlated with the firms' organisation. Small enterprises more often than not begin to behave like corporate bodies, with a corporate culture and a clear division of responsibilities. Medium sized enterprises often mirror their corporate counterparts with a distinct corporate culture and a dedicated IT function.

There are several distinctive characteristics of the SMME sector. To begin with, 70% of these firms are more concerned with quality of life issues than stock value (Schlenker & Crocker, 2003). The primary purpose of these firms is not to maximise revenues, but to generate an income for their owners. A second distinguishing characteristic is that the vast majority of these companies are not a source of economic growth in terms of either employment or turnover. A third characteristic of this sector is that most firms do not possess several of the core processes (conception, manufacturing, sales, delivery, after sales service) normally associated with doing business. As a result, SMMEs are forced to collaborate with each other and with larger businesses to survive, to compete, and to produce sustainable revenues over time (Schlenker & Crocker, 2003).

While there are a number of Web Analytics entrants into the South African market, for example, Acceleration, Manta SEO Solutions, E-traffic, Epnetwork and Search Maestros, organisations are still experiencing Web Analytics adoption challenges and may not have sufficient strategies and guidelines for implementing and conducting Web Analytics (Weischedel *et al.*, 2005; Hutchinson & Fu, 2010; Patton & Kaminski, 2010). A possible reason could be that there are few suitable frameworks to start a new Web Analytics business unit or even to use an existing Web Analytics business unit in order to transform existing e-businesses (Weischedel *et al.*, 2005; Dakela, 2006; Dakela & Seymour, 2008). There is the challenge of ascertaining the domain in which Web Analytics could be positioned (Dakela & Seymour, 2008; Malarvannan & Ramaswamy, 2010; Harrigan & Bian, 2011).



The following section covers the set of research questions determined this study. These research questions guided the research and were used in the compilation of the interview questionnaire for collecting data for the study.

## **1.4 Research questions**

### **1.4.1 Primary research questions**

There are two primary research questions in this study. They are based on the persistent problem that is described and explored in this study. The primary research questions are as follows:

- 1) How do SMEs (Small and medium enterprises) involved in e-commerce approach the implementation of Web Analytics?
- 2) What problems do SMEs encounter, and what model would be helpful in successful integration of Web Analytics, in the context of their online presence?

These research questions will be revisited in the final chapter of this study, chapter five, Evaluation and Conclusion.

## **1.5 Significance of this research and contribution that may be made**

This study intends to add valuable insights in the area of Web Analytics, especially to the South African online marketing community. The study intends to highlight:

- practical issues with regards to the roles of people: these issues are sometimes not well clarified in an online marketing environment
- challenges in Web Analytics
- a recommended Web Analytics model.

This study intends to provide adequate information to e-businesses that are willing to invest in Web Analytics about its important aspects. The study intends to inform various Web Analytics key stakeholders about how they view one another with regards to Web Analytics, to foster a better understanding amongst them.

The study intends to add theoretical contributions, methodological contributions and practical contributions in the field of Web Analytics that will be expatiated in the final chapter. The theoretical contribution that this study intends to make is both descriptive and explanatory, to enable a better understanding of e-commerce organisations that have adopted and implemented Web Analytics. The model that is developed is descriptive and explanatory of the context of the study. The model at the end of the study emphasises foundational Web Analytics concepts. The model highlights key concepts that may be considered and incorporated in the setting of an organisation's Web Analytics goals: definition of key performance indicators (KPIs), data collection, analysis, and applying the recommended changes identified through analysis.

Grounded action research has not been applied in many studies to test its appropriateness in various adaptations. The intention here is to add value methodologically by using grounded action research in this study. More literature about grounded action research has been added together with another pattern for appropriating grounded action research to the body of knowledge. In terms of practical contributions, it is important to note the potential global impact of the outcomes of this work. Small businesses have been identified as the key drivers for economic recovery, and the Internet has the potential to unlock information and business tools for them. While these findings will be published in the academic realm, it is already necessary to engage with the private sector and media to reveal my findings to the market, so that business owners can make use of these tools at the present moment. The online world adapts and changes so quickly, that it is important to spread the information as it comes to light.

South African online marketing businesses and other organisations interested in investing in Web Analytics may be interested in the results of this research. Web Analytics resellers in South Africa, together with clients of resellers and vendors, may also be interested in the results of this research. Before the results of the research are reported, there will be a systematic and rigorous methodology followed. The research results will be shared with practitioners in organisations. The research results will be shared with students who are interested in Web Analytics. The following section describes the qualitative research design for this study.

## **1.6 Qualitative Research Design**

### **1.6.1 Data collection**

Qualitative research is any type of research that produces findings not arrived at by statistical procedures or other means of quantification (Strauss & Corbin, 1998). It can refer to research about people's lives, lived experiences, behaviours, emotions, and feelings, as well as about organisational functioning, social movements, cultural phenomena, and interactions between nations (Strauss & Corbin, 1998). Qualitative methods were developed in the social sciences to enable researchers to study social and cultural topic areas of interest (Myers, 1997). The approach used in this study is qualitative in order to provide opportunities for in-depth exploration of the viewpoints of Web Analytics stakeholders in the early stages of the adoption process. The motivation for doing qualitative research as opposed to doing solely quantitative research is based on the opportunity it gives the researcher to conduct in-depth interviews with respondents in order to obtain a deeper understanding of Web Analytics. Qualitative research methods are designed to assist researchers to understand people and the social and cultural contexts within which they live (Myers, 1997). There is increasing acknowledgement, not in scholarly circles, but also among online marketing practitioners, of the need for the application of qualitative methodologies in their most fundamental sense, in order to gain valid insights, develop theory and help valuable decision making (Goulding, 2005).

Grounded action research is a method for advancing and refining the practice of the action research method (Baskerville & Pries-Heje, 1999). This method seems to be an ideal approach for studying change in companies. It is an integration of grounded theory and action research. This research method is discussed further in Chapter Three of this study.

While viewpoints were being gathered from various sources, qualitative interviews assisted in finding out more about the problems, the practices and the people involved in Web Analytics in an organisation. Qualitative data sources included observations and participation observation (fieldwork), interviews and questionnaires, documents and texts, as well as personal impressions and reactions (Myers, 1997).

Qualitative data are in the form of text, written words, phrases, or symbols describing or representing people, actions, and events in social life (Myers, 1997; Neuman, 2000). A combination of qualitative and quantitative research was used in this study; however qualitative research intentionally guided the study due to the nature of the questions that were to be described and explored. The nature of qualitative research is not necessarily sequential, however it is iterative. Themes are discussed as the need arises, whenever and wherever relevant.

### **1.6.2 Data analysis**

Grounded theory for analysis was used to analyse the collected data. Grounded theory researchers collect data and analyse it simultaneously with the initial phases of the research (Holstein & Gubrium, 2003). Qualitative modes of analysis (Myers, 1997) are concerned primarily with textual analysis (whether verbal or written). In this study, valid references from the Web sites, which have adopted and implemented Web Analytics and the literature, were inspected. Qualitative research does not have a wide range of clear, agreed upon processes and procedures for data analysis (Ritchie & Lewis, 2004; Myers & Newman, 2007). Grounded theory methods consist of flexible strategies for focusing and expediting qualitative data collection and analysis (Holstein & Gubrium, 2003). These methods provide a set of inductive steps that successively lead the researcher from studying concrete realities to rendering a conceptual understanding of them (Holstein & Gubrium, 2003). Grounded theory may be used as a mode of analysis in qualitative research as well. Analysis is the interplay between researchers and data (Strauss & Corbin, 1998).

Thematic analysis involves discovering classifiable themes and patterns in texts and in other qualitative data (Aronson, 1994; Ryan & Bernard, 2003). Themes come from the data and from the researcher's prior theoretical understanding of Web Analytics (Strauss & Corbin, 1998; Ryan & Bernard, 2003).

These authors (Strauss & Corbin, 1998; Ryan & Bernard, 2003) further describe this as theoretical sensitivity, which involves *a priori* themes from the characteristics of subject area:

- from a consensus on professional definitions found in literature reviews
- from local, commonsense constructs
- from the researcher's personal values, and theoretical orientations
- from personal experiences.

A qualitative research strategy is primarily followed in this study. Grounded theory for analysis and thematic analysis was used in this study, based on a data from two organisations. Generalisability is further done from business owners and Web Analytics experts from various companies. The next section discusses generalisability for this study.

### 1.7 Generalisability for the study

Lee and Baskerville (2003) quote the Oxford English Dictionary that it defines generalise as "to form general notions by abstraction from particular instances," generalisable as "capable of being generalised," and generalisability as "the fact or quality of being generalisable. There are four types of generalisability (Darke, Shanks & Broadbent, 1998; Lee & Baskerville, 2003; Walsham, 2006):

- Type EE generalisability: this means generalising from data to description
- Type ET generalisability: this means generalising from description to theory
- Type TE generalisability: this means generalising from theory to description
- Type TT generalisability: this means generalising from concepts to theory

Other-settings generalisability (Rodon & Sesé, 2008) is defined as:

the researcher's act of arguing, based on the representativeness of the sample, that there is a reasonable expectation that a knowledge claim already believed to be true in one or more settings is also true in other clearly defined settings.

In this study, Type EE generalisability and Type TT generalisability will be used, because this involves generalising from data to description and from concepts to theory. The other-settings generalisation is also used in this study, because generalisability claims require to be tested practically in follow-up research in clearly described research environments (Seddon & Scheepers, 2006; Nicolajsen & Scheepers, 2008). The type of research methodology used in this study is an induction approach. In chapter three, chapter four and chapter five, generalisability will be discussed and applied further. After the emergent results have been identified and reported on, there are expected achievements at the end of the study, and these are listed in the section 1.8.

### **1.8 Expected achievement at the end of the study**

The expected achievement at the end of the study (and some, soon after completion) are:

- a framework for Web Analytics adoption and implementation
- a PhD: Information systems qualification and a complete thesis (personal goal)
- a research publication in an accredited journal
- a presentation at a peer-reviewed conference and an entry in conference proceedings
- a report to sponsors and gratitude letters (funding and personal goal).

### **1.9 Format of the thesis**

The thesis is comprised of five chapters, appendices, references that have been used in this study and a glossary. Below is a summary of the five chapters of the study. The appendices consist of examples of Web Analytics vendors, research questions for this study and memos that have been captured during the grounded action research. A glossary of terms is included at the end of this thesis.

## Chapter 2: Overview of the literature

In chapter two, my topic area of interest is clarified and a general overview of the subject is given. Literature on Web Analytics practices, benefits and problems is provided. The importance of Web Analytics is established. Web Analytics is set in the context of Information systems. Examples of e-commerce Web sites that have adopted Web Analytics are discussed. A substantial argument for the importance of Web Analytics in practice and in research is reported. A systematic comparison of South Africa and the United Kingdom with regards to Web Analytics and related topics is made. The chapter ends with a short account of a marketing sequence model, and a personal conceptualization of Web Analytics themes.

## Chapter 3: Qualitative research design

In chapter three, the five major elements of the research design are introduced, they are: topic area of interest, idea context, research questions, methods, and credibility and dependability. The chapter describes ontological and epistemological assumptions that are made, revisits the area of concern, and introduces the case company and its setting. The Ethics Committee of the Faculty of Commerce (to which the Department of Information Systems belongs) at the University of Cape Town reviews the proposed interview questions and guidelines of research undertaken in the faculty. The issue of research ethics is highlighted. Considerations concerning the researcher's role and position with respect to the case organisation will be covered. The researcher's bias is declared as well. Generalisability of the research results is incorporated in the study, including the other-setting generalisability.

## Chapter 4: Research results and interpretation of the results

Chapter four reports the results from the field work and gives a report on data analysis in two main sections: First, twelve problems with the case company's Web Analytics implementation are identified, together with the actions taken to solve the problems. Second, through a description of the analysis of interview data, 88 original concepts identified in the data are systematically condensed into seven categories.

The end result is a model of “Continuous Innovation in Web Analytics” with inter-linked themes and twelve guidelines for Web Analytics adoption.

## Chapter 5: Evaluation and conclusion

Chapter five summarises the previous chapters, reviews the research questions and discusses the contributions of the research. The first research question, this is answered through the model concludes chapter four, and through a set of recommendations regarding organisational implementation of Web Analytics. The second research question is answered through the twelve guidelines, also presented in chapter four. Three types of contribution are described: theoretical contribution, methodological contribution, and practical contribution. The issues of credibility and dependability are covered. Limitations of the research and the suggestions for future research conclude the study.

### 1.10 Summary

**Web Analytics** is an evaluative technique originating from and driven by the business world in its need to get more value out of understanding the usage of its Web sites and strategies therein. It is the measurement, collection, analysis and reporting of Internet data for the purposes of understanding and optimising Web usage for the online visitor, the online customer and the business with Web site presence. **Advanced Web Analytics** is the examination and reporting of complex interactions between Web site visitor actions and what the Web site offers, to influence insights in order to optimise the Web site for improved customer loyalty and sales.

It is significant to define and differentiate between Web Analytics and Advanced Web Analytics. Metrics are the standards for measurement, providing target values that a company must achieve to reach a certain level of success. In Web Analytics, metrics are generally grouped into quantitative, qualitative and mixed metrics. Web Analytics has often been reduced to online statistics and quantitative metrics from Web Analytics tools.



Recently, e-commerce Web sites have gravitated towards Advanced Web Analytics, because they have the knowledge of their objectives (both organisational and digital objectives), which include increasing sales. They are becoming more customer-centric; in order to improve online customer service. It is important to use Web Analytics tools to produce quantitative and qualitative data to illustrate customer behaviour online.

The value of Web Analytics lies in translating data into meaningful information for assisting decision-makers to make actionable decisions that will support customer-centric online services. South African online marketing businesses and any other organisation interested in investing in Web Analytics may be interested in the results of this research.

There is a great deal of literature that defines Web Analytics and aspects of related subjects. There are various business articles that discuss Web Analytics generally. However there seems to be a limited amount of peer-reviewed literature that describes and explores Web Analytics in detail. Furthermore, there are few Web Analytics adoption and implementation frameworks. The research questions in this study were derived from these problems. The research questions evolved over many iterations during the reading of literature after the grounded action research had started. Grounded action research, as defined above, assisted in advancing and refining the practice of the action research method. Grounded theory for analysis was used to analyse the collected data.

The format of the thesis suggested the selected layout of this study. This chapter is concluded. The following chapter provides an overview of the literature sensitivity pertaining to Web Analytics.

## CHAPTER TWO

|          |  |           |
|----------|--|-----------|
| <b>2</b> | <b>OVERVIEW OF THE LITERATURE .....</b>  | <b>26</b> |
| 2.1      | Introduction .....   | 26        |
| 2.2      | Positioning Web Analytics in Information Systems .....                           | 27        |
| 2.2.1    | Positioning Web Analytics in Information Technology Adoption and Diffusion ..... | 27        |
| 2.2.2    | Positioning Web Analytics in Decision Support Systems .....                      | 30        |
| 2.3      | Web sites and Web Analytics.....   | 34        |
| 2.3.1    | Definitions of e-commerce and e-business .....                                   | 35        |
| 2.3.2    | E-commerce and Web Analytics relevance .....                                     | 39        |
| 2.4      | Practices, challenges and people in Web Analytics .....                          | 40        |
| 2.4.1    | The importance of Web Analytics in practice .....                                | 40        |
| 2.4.2    | Practices of Web Analytics .....   | 42        |
| 2.4.3    | Technology challenges of Web Analytics.....                                      | 44        |
| 2.4.3.1  | Site complexity .....  | 44        |
| 2.4.3.2  | Technology and training .....  | 45        |
| 2.4.3.3  | Metrics.....   | 45        |
| 2.4.3.4  | Data integrity and quality .....   | 45        |
| 2.4.4    | Organisational adoption challenges .....   | 45        |
| 2.4.4.1  | Challenges of management in an e-commerce organisation .....                     | 47        |
| 2.4.5    | Implementation challenges .....  | 47        |
| 2.4.6    | Human element involved in Web Analytics .....                                    | 48        |
| 2.4.6.1  | Identify key stakeholders .....  | 48        |
| 2.4.6.2  | Identify the most important Web site visitors .....                              | 49        |
| 2.4.6.3  | Hire and empower a full-time Web Analyst and a Webmaster .....                   | 49        |
| 2.4.6.4  | Resources .....  | 50        |
| 2.4.6.5  | Politics .....   | 50        |
| 2.4.6.6  | Negative attitudes.....  | 50        |
| 2.4.6.7  | Lack of IT knowledge and expertise .....   | 51        |
| 2.4.6.8  | Resistance to change .....   | 52        |
| 2.4.6.9  | Lack of management commitment .....  | 52        |
| 2.5      | Web Analytics in South Africa (SA).....  | 52        |
| 2.6      | Background to the observations made.....   | 54        |

---

|        |   |    |
|--------|---|----|
| 2.7    | Observations of the South African (SA) Web Analytics environment .....      | 54 |
| 2.8    | Web Analytics in the United Kingdom (UK).....                               | 56 |
| 2.9    | Comparison between South African and the United Kingdom Web Analytics<br>56 |    |
| 2.10   | The importance of Web Analytics in research.....                            | 57 |
| 2.11   | Theoretical themes.....   | 57 |
| 2.11.1 | A Web Analytics mind map for an e-commerce Web site .....                   | 58 |
| 2.12   | Summary.....  | 61 |

University of Cape Town

## **2 OVERVIEW OF THE LITERATURE**

### **2.1 Introduction**

The aims of the overview of the literature in this study are to argue for the importance of Web Analytics as well as the persistence of problems in this domain. This chapter reviews the literature in this area and identifies the theoretical gap that this research aims to fill. A number of grounded theory authors (Strauss & Corbin, 1998; Kelle, 2005) do encourage literature sensitivity when conducting grounded theory, even though it is not necessary to have a literature review when conducting a grounded action research study. The literature is drawn from academic and business publications. This chapter discusses different types of Web sites written by various authors and then compiles a consolidated view of all these types of Web sites. E-commerce and e-businesses are described and discussed, especially the principles of e-businesses and the impact that these have on adopting and implementing Web Analytics. The relevance of Web Analytics is described. Both the nature of an e-business, and the characteristics of an e-commerce Web site necessitate organisations to adopt and implement Web Analytics, in order to understand the behaviour of their customers online. In an e-business environment and in companies that have an e-commerce aspect to their business practice, Web Analytics should not be an afterthought in informing the digital strategy, but an important measurement tool. Web Analytics usage and non-usage is illustrated together with Web Analytics relevance in some organisations, even though they have adopted and implemented e-commerce. In order to thrive in the competitive business world, organisations need to devise efficient strategies that meet customer priorities.

Subsequent to Web Analytics relevance, the practices, the problems and the people involved in Web Analytics are reviewed. The general practice of Web Analytics usage is stated. Various challenges related to Web technologies from literature are discussed. The job descriptions and roles of a suggested Web Analytics team are discussed, together with some challenges relating to human resources in an environment of Web technologies.

A general overview of a Web Analytics scenario is illustrated. Informal observations made in the South African context with regard to Web Analytics are reported on. A description of Web Analytics usage in the United Kingdom follows. The outline of the thesis in chapter one is a guide as the move is made to literature sensitivity. A mind map of Web Analytics for an e-commerce Web site is briefly discussed in order to illustrate how the Web Analytics themes came about. Initially proposed themes for Web Analytics in an e-commerce context are illustrated.

## **2.2 Positioning Web Analytics in Information Systems**

There are different schools of thought placing Web Analytics research within IT adoption and others placing it within DSS. Web Analytics as a technology and discipline can be positioned within DSS, but the thesis initially discusses Web Analytics from the introduction, adoption and use of WA in an organisational environment. It also highlights the possibility of positioning Web Analytics within DSS. This research may either be positioned in the diffusion and adoption of technology or within DSS.

### **2.2.1 Positioning Web Analytics in Information Technology Adoption and Diffusion**

In this study, definitions by Carr (1999) have been applied, starting with: "adoption" which refers to the stage in which a technology is selected for use by an individual or an organisation. "Innovation" is similarly used with the nuance of a new or "innovative" technology being adopted. "Diffusion" refers to the stage in which the technology spreads to general use and application. "Integration" connotes a sense of acceptance, and perhaps transparency, within the user environment (Carr, 1999).

The basis of adoption, diffusion and innovation studies is founded from: firstly, German-Austrian and British schools of diffusionism in anthropology; and secondly, French sociologist Gabriel Tarde, who led the way in recommending the S-shaped diffusion curve (Rogers, 1976; Jensen, 1982). It is a model of the timing of adoption of an innovation that may be fundamental to later growth (Norton & Bass, 1987).

Research into technology-based innovation has been productive (Elliot & Loebbecke, 2000:49). The authoritative assessment of innovation literature is Rogers' (1995) work and Carr's (1999) work that identify attributes of innovation as: relative advantage, compatibility, complexity, trialability, and observability. Rogers' Five-Stage Innovative Processes model is shown in Table 2.2.1. Stages 1 and 2 are grouped as initiation and stages 3-5 as implementation. Rogers (1995) contends that the driver of the processes is the necessity to solve business problems; and that later stages in this model cannot be undertaken until the earlier stages have been settled. Rogers (1995) considers aspects of organisational level innovation. He identifies three approaches for adoption decisions at an organisational level: optional (firms can choose to adopt or reject an innovation independently of other members in a system); collective (choices are made by consensus among members of a system); and authority (choices are made by a few individuals in a system who possess power, status or technical expertise). Based on economic theory, the authors consider supply-push and demand-pull forces, which may drive innovations (Elliot & Loebbecke, 2000).

| 1  | 2  | 3   | 4   | 5   |
|--|--|---|---|---|
| Agenda setting   | Matching                                 | Redefining/<br>restructuring  | Clarifying  | Routinizing   |
| General problems<br>in organization<br>create need for<br>innovation | Fitting problem<br>with an<br>innovation | Modifying innovation<br>to fit organization and<br>altering organizational<br>structure | Defining<br>relationship<br>between<br>organization and<br>innovation | Innovation<br>subsumed into<br>organization's<br>activities |

Table 2.2.1: Rogers' five-stage innovative processes (Rogers, 1995)

Demand-pull is derived from the willingness of potential users to use the innovation (Elliot & Loebbecke, 2000). Throughout the organisation innovation literature, organisation innovativeness and rate of adoption have been the two most studied dependent variables (Shen, Hawley & Dickerson, 2004). Considering these two concepts does not directly serve the purpose of this study. Instead a new concept, Web Analytics adoption level, is discussed. The adoption of Web Analytics is similar to these two important innovation concepts in that they all concern the organisation's adoption behaviour (Shen *et al.*, 2004).

Rogers' research and theory on diffusion of innovation was reviewed and critiqued by Lundblad (2003). The four primary elements of Rogers' diffusion of innovation theory were described - the innovation, communication, time, and social system - with a special emphasis on how the theory applies within and across organisations. Dubin's theory building framework was used to critique the theory, and identified three key emergent themes (Lundblad, 2003). First, there is an opportunity to more fully extend Rogers' work into the organisational setting, some of which may be accomplished by bridging to additional existing organisational-based innovation diffusion research by other scholars. Second, there is a need to fully describe the interaction between the innovation, the adopter, the social system, and the other influencers of adoption, especially how these elements of the theory relate to diffusion of innovation within organisations. Third, there is a gap in research and theory of diffusion of innovation across organisations. A number of important but yet unanswered research questions were posed to continue to extend and expand Rogers' theory of the diffusion of innovation.

Web Analytics also faces a number of important questions regarding innovative strategies of diffusing it in an organisational setting. There is a challenge of bridging the innovation and the communication gap between academia and some organisations within a reasonable timeframe. There are question in Web Analytics regarding clarifying the interaction between the innovation, the adopter, the organisational setting, and the other influencers of adoption. More research needs to be done in these aspects by organisations adopting and implementing Web Analytics, because Web Analytics research yielding actionable insights is lacking.

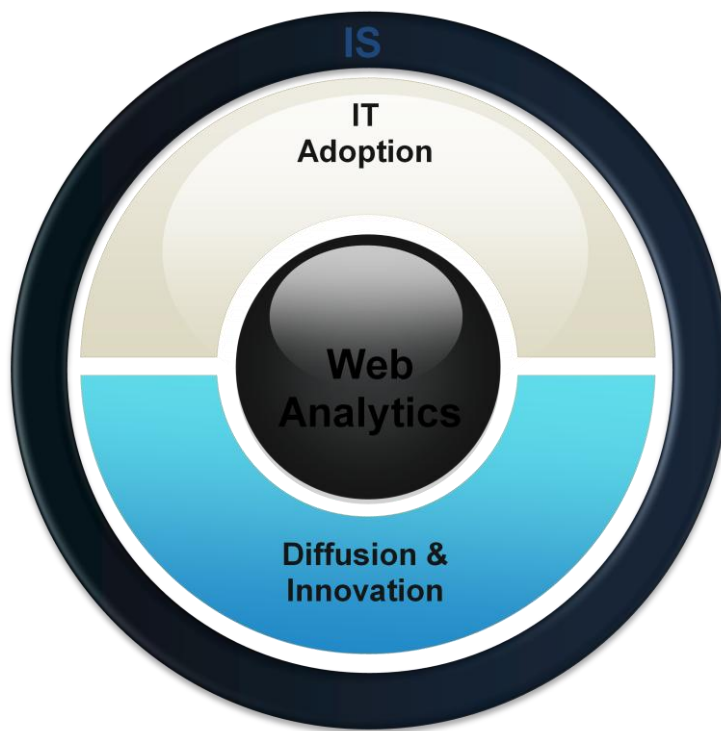


Figure 2.2.1: Positioning Web Analytics within IT Adoption, Diffusion and Innovation

### 2.2.2 Positioning Web Analytics in Decision Support Systems

As mentioned in chapter one, there are various types of information systems such as customer relationships management, decision support systems, knowledge management systems, expert systems, enterprise applications, supply chain management and executive information systems (Carvalho & Ramos, 2006; Filip, 2007). Decision support systems (DSS) is the area of Information Systems (IS) discipline that is focused on supporting and improving managerial decision-making (Arnott & Pervan, 2008; Kou, Shi & Wang, 2010).

A number of research suggestions made about DSS relate to case study research, design science, professional relevance, industry funding, theoretical foundations, data warehousing, and business intelligence (Arnot & Pervan, 2008). The suggestions should help DSS researchers construct high quality research agendas that are relevant and rigorous. Characteristics of computerised DSS clarify this application domain (Power & Sharda, 2009). After reviewing management information needs, a modern taxonomy of DSS is briefly summarised.



The major DSS sub-fields (Arnot & Pervan, 2008; Eslami, Abu-Hanna, Jonge & Keizer, 2009; Power & Sharda, 2009) are:

- Personal Decision Support Systems (PDSS): usually small-scale systems that are developed for one manager, or a small number of independent managers, to support a decision task;
- Group Support Systems (GSS): the use of a combination of communication and decision support systems (DSS) technologies to facilitate the effective working of groups;
- Negotiation Support Systems (NSS): DSS where the primary focus of the group work is negotiation between opposing parties;
- Intelligent Decision Support Systems (IDSS): the application of artificial intelligence techniques to decision support;
- Knowledge Management-Based DSS (KMDSS): systems that support decision making by aiding knowledge storage, retrieval, transfer and application by supporting individual and organisational memory and inter-group knowledge access;
- Data Warehousing (DW): systems that provide the large-scale data infrastructure for decision support;
- Enterprise Reporting and Analysis Systems: enterprise focused DSS including executive information systems (EIS), business intelligence (BI), and more recently, corporate performance management systems (CPM). Business Intelligence (BI) tools access and analyze data warehouse information using predefined reporting software, query tools, and analysis tools (Arnot & Pervan, 2008; Eslami *et. al.*, 2009; Power & Sharda, 2009).

The managerial view of business intelligence (BI) is getting the right information to the right people at the right time so that they can make decisions that ultimately improve enterprise performance (Bose, 2009; Kursan & Mihic, 2010). These authors further elaborate that the technical view of business intelligence (BI) usually centers on the process of, or applications and technologies for, gathering, storing, analyzing and providing access to data to help make better business decisions.

A key enabler of Web site measurement is Web Analytics and metrics (Spremic, Jakovic, & Bach, 2008). Web Analytics especially refers to the use of data collected from a Web site to determine which aspects of the web site work towards the business objectives. Web analytics must play an important role in overall company strategy and should converge to web intelligence – a specific part of business intelligence which collects and analyses information collected from web sites and applies them in a relevant business context (Spremic *et. al.*, 2008). Therefore, Advanced Web Analytics, which performs all these tasks in addition to the information-delivery component of business intelligence (BI), started garnering a great deal of attention in overall business intelligence (BI) strategies (Bose, 2009). Effective decision making for competitive advantage is driving the need for a more comprehensive approach to business intelligence (BI). Recent forecasts by industry analysts suggest that Advanced Web Analytics will be the driving force in the business intelligence (BI) market for some time to come (Bose, 2009).

The enterprise BI architecture consists of the following components:

- Data integration – capabilities for both structured and unstructured (such as text) data connectivity, data quality, ETL (extract, transform, and load), data migration, data synchronization, and data federation (Bose, 2009).
- Advanced Web Analytics – data, text, and web mining capabilities, visualization systems, recommendation systems, predictive and descriptive modeling, forecasting, optimization, simulation, and more (Bose, 2009; Kursan & Mihic, 2010).

Web Analytics can be considered as a type of DSS and a component of BI in the context of the study, because of the illustration provided by various authors (Carvalho & Ramos, 2006; Arnot & Pervan, 2008; Dakela & Seymour, 2008; Spremic *et. al.*, 2008; Bose, 2009; Eslami, Abu-Hanna, Jonge & Keizer, 2009; Power & Sharda, 2009; Kursan & Mihic, 2010; Walstrom, 2010). The understanding of the above-mentioned studies is illustrated below in figure 2.2.2.



Figure 2.2.2: Positioning Web Analytics within DSS

Another factor in the positioning of Web Analytics is management information systems (MIS). The concept of a management information system enlarges the scope of information processing to encompass not just applications for transactions and operations, but also applications that support administrative and management functions that support organisational communications and coordination, and add value to products and services (Davies, 2003). The structure of a management information system consists of a technical infrastructure, databases and other repositories, and a portfolio of application systems (Davies, 2003).

Other authors (Roberts, 2008; Malarvannan & Ramaswamy, 2010; Harrigan & Bian, 2011) are exploring Web Analytics as a domain of marketing in various studies. Roberts (2008) further reviews the performance of a Web site as a function of online marketing. Kursan and Mihic (2010) draw attention to the role of the Web in marketing research and everyday business decision-making.

## **2.3 Web sites and Web Analytics**

There has been little understanding of how to measure the real costs and benefits of information systems, such as Web sites and Web Analytics. Such measures such as visits, hits and direct sales illustrate part of the bigger picture. Many Web site key qualities, such as convenience, variety, and ease of access to information are difficult to measure (Welling, 2006). It is important to highlight that Web sites and Web Analytics have intangible benefits as well. Some tangible Web Analytics benefits will be discussed below, under the importance of Web Analytics in practice and in research.

There would be no need for Web Analytics if there were no Web sites. In other words, there is a high level of Web Analytics relevance in the existence of Web sites and Web Analytics usage does not happen in isolation. Because this is so, it is important to understand some key aspects of Web sites pertaining to Web Analytics. There are generally four types of Web site (WebSideStory, 2004; GrokDotCom, 2005). These are the electronic commerce (e-commerce), lead generation, content/media and support/self-service Web site. Six types of Web site have been defined by Teo and Pian (2004). These are online storefront, Internet presence, content sites, electronic malls, incentive sites and search agents.

An e-commerce Web site should be in the same category as an electronic mall Web site and a content/media Web site should have the same classification as a content Web site. In the illustration below, the first classification is used because it is more recent than the latter.

Some Web sites may be a combination of the classifications of Web sites. This study will focus on an e-commerce and a self-service Web site (which is a combination of the general types) that have adopted or have implemented Web Analytics in their business, as illustrated in Figure 2.3 below.

|               |                      |
|---------------|----------------------|
| e-commerce    | lead generation      |
| content/media | support/self-service |

Figure 2.3: Types of Web site for this study (combination of e-commerce and self-service)

### 2.3.1 Definitions of e-commerce and e-business

As mentioned in the previous section, an e-commerce Web site is one type of Web sites. An e-commerce and e-business Web site is used as a subject of this study, because there is a general perception that every e-commerce Web site should implement Web Analytics. This general perception will be explored later in this chapter. Electronic commerce involves the undertaking of normal commercial activities that cover both intra-organisational and inter-organisational electronic messaging and information management, government, or personal activities, by means of computers and telecommunication networks; a wide variety of activities are included, involving the exchange of information, data or value-based exchanges between two or more parties (Kao & Decou, 2003; Quayle, 2002; Cloete, 2002; Chesher & Kaura, 1999).

E-business is the use of telecommunication networks, particularly the Internet, to conduct business transactions. It includes activities such as customer relationship management (CRM), customer profiling and the evolution of entirely new products and services (McNurlin & Sprague, 2002; Rayport & Sviokla, 1995). These activities are the realisation of a fully-fledged virtual value chain as described by the authors quoted.

E-business and e-commerce are defined as any online business movements that change internal and external relationships to use market opportunities driven by new rules of the connected economy and value (Damanpour, 2001). The authors mentioned above (McNurlin & Sprague, 2002; Rayport & Sviokla, 1995), and Cloete (2002) agree that e-business and e-commerce are two different concepts. The exception is Damanpour (2001) who does not differentiate between the two concepts.

In an e-business the need to understand the customer is very important due to the fact that the customer may not necessarily visit the organisation in person; therefore a need arises to find strategies to thoroughly understand the client in order to continually improve service. At the core of every business, there should be a need to understand the customer, so that organisations may have effective strategies for customer-centric services. The nature of an e-business, and/or an e-commerce Web site and the characteristics they have necessitate that organisations adopt and implement Web Analytics in order to understand the behaviour of their online customers. In an e-business environment and in companies that have an e-commerce aspect to their business practice, Web Analytics should not be an afterthought in informing the digital strategy, but an important measurement tool. These organisations need to take note of what Kalakota and Robinson (1999) state in the following quote:

Visionary organisations are setting new rules within their industries via new technology business designs, new inter-enterprise processes, and integrated operations to support changing customer requirements.

Customer-centric innovation, as further explained by Kalatota & Robinson (1999), requires organisations to ask the following three questions:

1. How will e-commerce change our customer priorities?
2. How can we construct a business design to meet these customer priorities?
3. What technology investments must we make to survive, let alone thrive?

The eight e-business principles, described below, persuade organisations with an e-commerce aspect to consider investing in adopting and implementing Advanced Web Analytics. There are eight principles of an e-business that are formulated by Kalakota and Robinson (1990) that the author summarises below.

Principle 1: Technology is the basis for informing business strategy and no longer a secondary reason.

Principle 2: The ability to rationalise structure, persuade and manage information distribution is more powerful and cost-effective than conventional commerce.

Principle 3: Holding on to obsolete, traditional business practices often leads to challenges and ultimately to business failure.

Principle 4: Innovative business practices aim to facilitate flexible outsourcing alliances between companies that save costs and promote customer satisfaction.

Principle 5: E-commerce allows organisations to understand customer behaviour and hear the views of the customers.

Principle 6: Technology should be used to innovate, consider customers, and improve the whole experience surrounding the product, from selecting and ordering to receiving and service.

Principle 7: The business design of the future uses e-business community models that can be reorganised to best meet costumers' needs.

Principle 8: The challenging task for management is to align business strategies, processes, and applications fast, right and simultaneously. Wise leadership is vital for this.

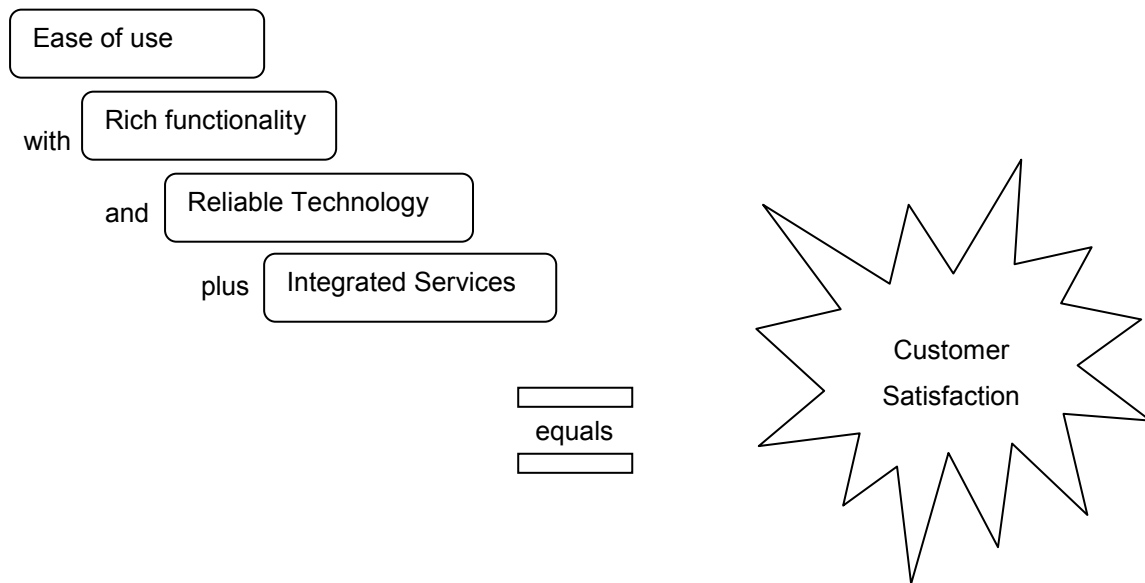


Figure 2.3.1: Operational excellence model leading to customer satisfaction (Kalakota & Robinson)

Generally customers want organisations that they conduct business with to constantly improve in speed, convenience, personalisation and price (Kalakota & Robinson, 1999). As illustrated in Figure 2.3.1, e-commerce changes the priorities of a customer to include aspects such as ease of Web site usage, rich functionality, reliable technology and integrated services (Kalakota & Robinson, 1999). In order to thrive in the competitive business world, organisations need to come up with efficient strategies that meet these customer priorities.

As stated in chapter one, in an e-commerce context that is primarily for converting and retaining customers, without the adoption and implementation of Web Analytics, it may be difficult to improve service. Without Web Analytics tools, e-business finds it challenging to measure and understand customer behaviour online; therefore they find it difficult to offer convenience and personalised service, which are aspects fundamental to customer satisfaction. Web Analytics tools (see Appendix A for a list of tools) include, but are not limited to, Web Analytics software packages, such as Omniture's SiteCatalyst; and Web Analytics benchmarking tools, such as HitWise. Free Web Analytics tools available online include Crazy Egg. Free open source tools such as Piwik and Open Web Analytics are available, and niche tools such as Mochibot to track flash files (Kaushik, 2009).



The Internet has provided a platform to deliver customer relationship management (CRM) functions on the Web, namely, electronic customer relationship management (e-CRM), according to Feinberg and Kadam (2002). Vendors abound with sophisticated and expensive technologies delivering (or promising to deliver) customer relationship management (e.g. Siebel ([www.siebel.com](http://www.siebel.com)); Convergys ([www.convergys.com](http://www.convergys.com)); Genesys ([www.genesyslab.com](http://www.genesyslab.com)); and a great many of others). These systems have a lot of technical attributes, functions that have come to define CRM but interestingly, they do not put an emphasis on customer satisfaction measurement, something that must be at the core of any CRM implementation (Adebanjo, 2003; Feinberg & Kadam, 2002; Harrigan, Ramsey & Ibbotson, 2011). There are alternatives to Web Analytics tools, such as, e-CRM tools (Web-based Customer Relationship Management tools) and data mining tools. These alternatives tend to be more expensive and more difficult to use than Web Analytics tools.

### **2.3.2 E-commerce and Web Analytics relevance**

E-commerce has resulted in organisations investing considerable funds in innovative online approaches to extend business processes on to the World Wide Web (WWW) (Phippen *et. al.*, 2004). Traditional methods of measuring Web practice are inadequate in the light of the data required for the efficient evaluation of such approaches (Phippen *et. al.*, 2004). E-commerce has promised much for business, but frequently publicised problems with adopting an organisational Web strategy highlight the continued need for sound business practice (Phippen *et. al.*, 2004). The authors (Phippen *et. al.*, 2004) further state that many organisations now have Web sites to complement their other activities, but it is likely that a significantly smaller proportion really know how successful their Web sites are. The measurement of business activity is an accepted part of any organisation, and this should still apply in e-commerce; however, the difficulty lies in how to measure e-business activity (Phippen *et. al.*, 2004). Not most types of businesses need to adopt and implement Web Analytics. Even though it may be vital for some e-commerce Web sites to adopt and implement Web analytics, it may not be necessarily useful for e-commerce Web sites. For example, a business with an e-commerce Web site with fixed long term customers such as an engineering firm that is giving services to government hospitals in a certain location, may not find Web Analytics usage important.

The following types of organizations with associated Web sites would find relevance and benefits from adopting and implementing Web Analytics: media, online storefronts, lead generation, incentives Web sites and search agents. Although there are Web site types that would not survive without Web Analytics, there are some that may not need Web Analytics to thrive. Some businesses do not necessarily require Web Analytics adoption and implementation. It is apparent that companies that do not have a Web presence do not need Web Analytics.

## **2.4 Practices, challenges and people in Web Analytics**

In this section, part of the available literature on practices, challenges and people in Web Analytics is reviewed. The importance of Web Analytics in practice and in research is discussed. The challenges in Web Analytics include technological challenges, adoption challenges, implementation challenges and organisational challenges. It would be advisable to inspect the philosophy of the people in Web Analytics and their roles clearly defined.

### **2.4.1 The importance of Web Analytics in practice**

It is beneficial to understand why organisations that have Web sites apply Web Analytics. It is important to implement Web Analytics on Web sites, so that companies are able to measure and monitor their own Web site goals. Understanding and implementing Web Analytics may realise business strategies that yield extra income for the company (Welling & White, 2006; Sostre & LeClaire, 2007; Hassan *et. al.*, 2009; Waisberg & Kaushik, 2009). For example, for a lead generation Web site, the goal may be for online visitors to download a newsletter and subscribe to periodic newsletters. For an e-commerce Web site, the goal may be to convert online visitors to online customers and later on retain them. This researcher suggests that Web Analytics should be placed within business intelligence division in a corporate strategy, even though it seems to impact most organisational divisions, because of the contextualisation that is proposed in section 2.2 and the illustrations given by various authors (Carvalho & Ramos, 2006; Arnot & Pervan, 2008; Dakela & Seymour, 2008; Spremic *et. al.*, 2008; Bose, 2009; Eslami, Abu-Hanna, Jonge & Keizer, 2009; Power & Sharda, 2009; Kursan & Mihic, 2010; Walstrom, 2010).

Web Analytics seems to form part of the digital strategy within a corporation. Another approach of determining how to place Web Analytics within a corporate strategy would be to clarify its requirements, the reasons for adopting it and the motivation for its implementation. An organisation may then decide from the objectives stated for adopting and implementing Web Analytics in their organisation where to place it within corporate strategy.

The measurement and monitoring of Web site traffic assists managers to make informed decisions regarding plans for future growth (Phippen *et. al.*, 2004). Actionable data offers a foundation on which to make decisions about Web site changes, search engine marketing, or customer relationship management. Web Analytics software presents statistics that add value to actionable data (Sostre & LeClaire, 2007; Waisberg & Kaushik, 2009). Segmentation is the differentiation of Web site visitors based on behaviour on the Web site (Phippen *et. al.*, 2004).

Web Analytics enables segmentation which improves targeting. Targeting in turn enables the Web site to reach the right customers with the appropriate message. Affiliate marketers benefit from the use of Web Analytics to discern which campaigns (including e-mail marketing efforts) are effective or yielding returns on investment (Phippen *et. al.*, 2004; Welling & White, 2006; Sostre & LeClaire, 2007; Hassan *et. al.*, 2009).

Web Analytics is valuable to ascertain which keywords were used to search (Sostre & LeClaire, 2007) within the Web site so that the organisation may optimise paid search strategies for search engine optimisation (SEO). A company may then develop new product lines, new services and new content based on these keywords online visitors have used.

Some major e-commerce brands use Web Analytics data to make real-time changes to their Web sites, improve Web site usability and for planned Web site redesign (Phippen *et. al.*, 2004; Welling & White, 2006; Sostre & LeClaire, 2007; Hassan *et. al.*, 2009; Waisberg & Kaushik, 2009). Web Analytics may also assist in finding errors, such as broken links and pages that do not exist on the Web site that could frustrate online customers.

The bottom line in Web Analytics is return on investment (ROI). One can determine return on marketing investment by looking at site referrer and click streams of online visitors who came through marketing efforts such as link exchanges, postings to newsgroups, sponsorships on online events and blogs (Welling & White, 2006; Sostre & LeClaire, 2007; Kaushik, 2009). The authors further substantiate the benefits of Web Analytics by highlighting that return on advertising spend measures conversions originating from banner ads and paid searches. The last ROI metric that these authors deem important is the gross rating point that offers a percentage of an organisation's target audience that an online advert reaches. Web Analytics can save an organisation time and money by making clear what marketing is working and what is not (Welling & White, 2006; Sostre & LeClaire, 2007; Kaushik, 2009).

#### **2.4.2 Practices of Web Analytics**

The following section discusses some of the current practices in the field of Web Analytics. The current practice of measuring quantitative and qualitative metrics is growing (Kaushik, 2007). Web analysts need to measure what the online visitors and online buyers do when they are online and why they do what they do. The behaviour of online prospective customers and customers has become very important for meeting Web Analytics objectives (Kaushik, 2007).

As the Web Analytics industry matures, Ballardvale (2004), Coleman (2004) and Sterne (2004) point out that there are still many Web sites that are challenged to obtain value out of their investment in Web Analytics software. Ballardvale (2004) and Sterne (2004) suggest the following practical insights on how to get value out of Web Analytics:

- define primary goals for Web site
- determine the key performance indicators (KPIs)
- identify and implement the right solution
- use multiple technologies and methods
- make improvements iteratively
- establish a process of continuous improvement

Other authors (Waisberg & Kaushik, 2009) agree with Ballardvale (2004), Coleman (2004) and Sterne (2004) that Web Analytics is a process that proposes a virtual cycle for Web site optimization. Based on the field's best practices (Ballardvale, 2004; Coleman, 2004; Sterne, 2004; Waisberg & Kaushik, 2009), a framework for analysing Web site performance should include the following steps:

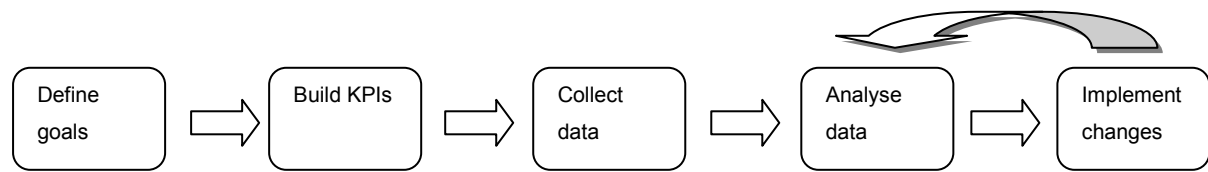


Figure 2.4.2 Web Analytics practice process

At present some Web Analytics packages provide ready-made statistics, and others supply raw data to enable further analysis (Voorbij, 2010). For example, Web site owners may be interested to see which pages are frequently visited by new visitors and which ones by returning visitors. It is challenging to interpret the data and do the analysis. Some people in the organisation viewing the data may not even understand what the data means (Atkinson, 2007). Therefore the interpretation is seldom understood, let alone applied to the above-mentioned Web Analytics iterative process. The current practice is flawed, because there is insufficient emphasis on the actionable insights for improvement. A general problem with Web analytics is that an incomplete picture of Web site usage is provided. Often the data do not cover complete site traffic because of untagged areas of the site, and this situation results in incomplete available data (Atkinson, 2007). Other organisations tend to want to adopt Web Analytics tools, such as SpeedTrap, that automatically tag the Web site, without thinking about reporting issues of that glut of information.

Another limitation in the current practice is the fact that the reasons why online visitors do what they do is hardly investigated at all and the Web Analytics tools do not provide that sort of qualitative detail (Atkinson, 2007). Another observation that this researcher has made is a lack of predefined KPIs within organisations that are keen to use Web Analytics. Other organizations may have well defined organisational goals; however the Web Analytics strategy is not necessarily aligned to these defined Web site goals. In other instances the Web site goals are not aligned to organisational goals. This creates more practical challenges.

In current practice, Web statistics are used for internal rather than external comparison (Voorbij, 2010). As long as an organisation uses the same tool and does not fundamentally change its Web site, analysing trends is possible. There is a large variety of Web Analytics tools. They report different scores, dependent on the features of the tool (definitions and measuring methods) and external factors (proxy servers, dynamic IP addresses, caching, blocking or deleting cookies). Because of the dependence on external factors, there are hardly any tools capable of delivering absolutely reliable numbers (Voorbij, 2010). This makes it difficult to compare Web statistics of one organization with those of other organisations, unless they use the same package. Comparing data obtained by logging and tagging tools does not make sense, as these are based on different principles. When comparing data obtained by a similar type of tool, a deviation of at least 20 or 25 percent should be allowed (Voorbij, 2010). This suggests that Web analytics has limited value for strategic purposes (Atkinson, 2007).

In as much as there are recommendations to get value out of Web Analytics, the value does not come easily; there are technological challenges, organisational adoption challenges, implementation challenges and a human element that exist and are discussed in the next sections.

### **2.4.3 Technology challenges of Web Analytics**

There are a number of key challenges with Web Analytics that should be recognised and accounted for both before and after implementation (Ballardvale, 2004; Robertson, 2003). These issues are discussed here.

#### **2.4.3.1 Site complexity**

The more complex the site; the more difficult Web Analytics becomes. If the site does not have a small set of clearly defined goals or if it fits into more than one of the basic types of site (lead generation, e-commerce, content or self-service), then it may become increasingly difficult to determine which KPIs are relevant (Atkinson, 2007; Ballardvale, 2004).

#### 2.4.3.2 Technology and training

Even though user interfaces for the tools have made significant advances, it is still critical that business users and Web site managers get adequate training so they can derive the maximum benefit (Atkinson, 2007; Ballardvale, 2004).

#### 2.4.3.3 Metrics

Metrics can be quantitative and, more importantly, qualitative as well. It is important not to neglect the qualitative metrics (Robertson, 2003). This is a hurdle that must be overcome before Web Analytics can help the Web site managers optimise the site. Sometimes the most difficult problems revolve around identifying the most suitable KPIs for a Web site.

#### 2.4.3.4 Data integrity and quality

The accuracy of the data is seen as a key concern (Atkinson, 2007; Ballardvale, 2004). Due to the nature of the Web, which is inherently indeterminate, there is always going to be some level of inaccuracy. This is an area where solution providers can continue to make improvements.

### 2.4.4 Organisational adoption challenges

Web Analytics is sometimes categorised under Web technologies. Web technology adoption challenges are similar in many respects to e-commerce adoption challenges, especially the organisational adoption challenges. E-commerce adoption challenges are due to many factors and Farhoomand *et al.* (2000) discovered that technical, organisational, economic, cultural, political and legal factors are the main challenges. The organisational challenges in their research consist of *negative attitudes, lack of knowledge, resistance to change and lack of management commitment*. These negative attitudes have a direct impact on people involved in Web Analytics and may affect them in a personal manner. Other challenges may challenge people involved in Web Analytics indirectly.

The major adoption challenges according to Stockdale & Standing (2004), are the lack of resources and knowledge, the skill levels of business operators, the lack of trust in the IT industry and the lack of e-commerce readiness in some industry sectors. A further barrier is the lack of recognition of the potential to improve business performance. The most significant challenges to the adoption of Web technologies according to Barnes & Hunt (2001), are implementation costs, operating costs, lack of expertise and difficulties in providing adequate training.

Table 2.4.4 lists these e-commerce adoption challenges found in the literature and ranked them from the most to the least important according to Barnes & Hunt (2001).

| <b>CHALLENGES TO WEB TECHNOLOGY ADOPTION</b>  | <b>RANKING<br/>(1 = most important;<br/>19 = least important)</b> |
|---|---|
| Start-up costs (implementation)               | 1   |
| Lack of staff expertise                       | 2   |
| Operating costs                               | 3   |
| Providing adequate training                   | 4   |
| WWW service provider products and services    | 5   |
| Integration of WWW with internal applications | 6   |
| Time-consuming to adopt the WWW               | 7   |
| WWW service provider performance              | 8   |
| Not enough perceived benefits                 | 9   |
| Application software package WWW capabilities | 10  |
| Security problems associated with using WWW   | 11  |
| Staff resistance                              | 12  |
| Lack of business partners who are WWW-capable | 13  |
| Need for re-engineering of business processes | 14  |
| Inter-connection among WWW service providers  | 15  |
| Customer resistance                           | 16  |
| Examples                                      | 17  |
| Difficulties with WWW document standards      | 18  |
| Lack of space for computer                    | 19  |

Table 2.4.4: Challenges to adopting Web technologies (Barnes & Hunt, 2001:130)



A major concern cited by most decision-makers for e-commerce is security or rather the lack thereof (Labuschagne & Eloff, 2000). In the study conducted by Laforet and Li (2005), hackers and fraud were found to be one of the main challenges to online banking adoption. For this reason, many Internet subscribers still feel uncomfortable about the idea of trading over the Internet. To them, the possible risks incurred do not justify the potential rewards. Unfortunately, their fears are not completely unfounded (Labuschagne & Eloff, 2000).

#### 2.4.4.1 Challenges of management in an e-commerce organisation

Organisations, through leadership and vision, must create a culture rewarding the entrepreneurial spirit necessary to deal with the speed of change on the Internet. Information and communication technologies certainly play a pivotal role in the manner in which service organisations conduct business. Creating an organisational culture where speed and acceptance of change is apparent will result in increased attractiveness for foreign direct investment in developing countries (Javalgi *et al.*, 2004).

#### 2.4.5 Implementation challenges

Web technology implementation challenges are similar in many respects to e-commerce implementation challenges, especially the organisational implementation challenges. The following section discusses the implementation challenges of Web technologies and e-commerce.

Kulula.com is a South African low cost airline as well as an e-commerce Web site. According to Scholtz (2005), the challenges that the IS management of Kulula.com had to grapple with are the following:

- understanding customer requirements
- keeping up with requests
- being able to react quickly
- identifying, designing and delivering solutions in sensible time frames
- having the ability to support and maintain implemented solutions
- managing the risk of the existing environment
- setting up early warning and response

Some significant challenges explored in the study conducted by Farhoomand *et al.* (2000) were implementation costs and operating costs. Other challenges identified in the same study consist of establishment of infrastructure, integration of legacy systems, availability of applications and standards, capabilities and performance of the Internet security, governmental attitudes and interagency coordination. These challenges, along with others, have an effect on the people involved in Web Analytics who are faced with understanding their own roles.

#### **2.4.6 Human element involved in Web Analytics**

People are a necessary part in any information system. Most of the Information systems (IS) definitions (Roode, 1993; Stair & Reynolds, 2006; Will, 1970) that have been reviewed explicitly, include people and their reasoning minds as key players. Will (1970) considers that computerised marketing information systems will never be able to replace the reasoning human mind.

For the purpose of this study the most important people are those who meaningfully engage in offering Web Analytics services to clients (the Web Analytics team), prospective customers and customers. The reason for this is that the customer behaviour patterns involve the customer and they need to be analysed by the Web Analytics team, or more especially, by the analyst (Ballardvale, 2004).

##### **2.4.6.1 Identify key stakeholders**

One of the first steps is to identify those who have a crucial interest in the success of the Web site. These people will not be from any one business unit but will consist of roles such as online content producers, merchandisers, site developers, online advertising sales staff, marketing personnel and researchers. Web Analytics should not be something that is forced upon people but should be seen as a vital new tool to help improve the business processes of parties involved (Ballardvale, 2004). One of the most important steps is to identify those who have an essential interest in the success of the Web site.

#### 2.4.6.2 Identify the most important Web site visitors

For many Web sites a relatively small base of online visitors brings a surprisingly large amount of value to the business. The online visitors who are the most valuable over time are important for the success of the site. These might be the people who come to the site the most often, generate more page views, spend the most money, or sign up for the most newsletters.

In general, if Web site managers can find out what these online visitors want and try to make their experience better, then the experience of other online visitors will improve. A common way to better understand who these potential online customers are and what they are doing, is through segmentation and asking that particular segment, relevant questions (Ballardvale, 2004).

#### 2.4.6.3 Hire and empower a full-time Web Analyst and a Webmaster

It can be hard to become an expert at Web Analytics if that is a part-time role. It is difficult to be looking at the strategy of the business unit if there are many other high priority tasks that need to be addressed on a daily basis. For that reason it is recommended that a single person be assigned as a full-time Web Analyst. According to Maguire (2004), one of the most important Web Analytics decisions that an organisation must make is, who is going to be responsible for translating data into meaningful and actionable insight. This person will have the task of following the data analysis, week after week, and reporting it to assigned staff members (Maguire, 2004). In order to derive maximum benefit from the Web Analytics solution, it is important to have at least one educated and experienced analyst who can examine data. If the end result of Web Analytics is reports and not action, then there is little benefit (Ballardvale, 2004; Kaushik, 2007; Kaushik, 2009).

Some companies hesitate to hire a full-time analyst but Maguire (2004) believes that, if the right person is, if they are smart, they are empowered, then the return on investment should be very strong (Maguire, 2004; Peterson, 2004; Kaushik, 2007; Kaushik, 2009). In addition, a key contributor to success is a Webmaster (or another similar or suitable title) – a single person responsible for a company's online presence (Ballardvale, 2004; Kaushik, 2007; Kaushik, 2009).

This person will be in charge of establishing the Web site's vision and helping resolve disputes between the various departments. With committee-style leadership, the Web site is likely to fluctuate between chaos and paralysis. Therefore it is better to have a single person in this role who takes responsibility for the Web site and is duly held accountable (Ballardvale, 2004; Kaushik, 2007; Kaushik, 2009).

#### 2.4.6.4 Resources

Since many Web Analytics solutions are provided as a service, there is often the misunderstanding that few additional resources are required. Someone is always needed to implement the instrumentation or tracking tags on the Web pages. It also may not be sufficient to simply add a tag to track click-stream data. Usually, additional changes are needed to get more valuable data from certain pages.

Generally, some authors (Kaushik, 2007; Kaushik, 2009; Waisberg & Kaushik, 2009) recommend that Web Analytics investment should be divided 90% towards the Web Analytics team and 10% towards the Web Analytics tools. This researcher concurs with this recommendation, because it is the Web Analytics team that is going to implement the tools and extract actionable insights from Web Analytics reports.

#### 2.4.6.5 Politics

Political or management problems can sometimes be the biggest roadblock to success. These may be in the form of inaction on the part of management, lack of education and backing by corporate leadership, or the fact that there is no one ultimately responsible for the Web channel. It is also problematic if the Web site business management views Web Analytics as a responsibility of the IT department. Since Web Analytics is primarily a business analysis tool, it must be implemented with the goals of the business, not IT, in mind (Ballardvale, 2004).

#### 2.4.6.6 Negative attitudes

Negative attitudes generate many reasons for not committing to e-commerce and subsequently to Web Analytics (Farhoomand *et al.*, 2000). Some people have an attitude of perceiving that if they use e-commerce and experience problems, it could cause them to have financial loss that could potentially land the organisation in financial trouble (Rotchanakitumnuai & Speece, 2003).

Since Web Analytics is an innovation which is costly to implement and is compatible with Web sites, especially e-commerce Web sites, there may be negative attitudes regarding the implementation of Web Analytics.

Fear of entry into global markets, ignorance about technology, and concerns about security, costs and others (Simpson & Docherty, 2004), form part of negative attitudes. Many people are generally afraid of venturing into the Web Analytics world. They would rather hide behind negative attitudes instead of dealing with, for example, learning about Web Analytics in order to deal with the challenges constructively. Fear and insecurity issues (which may be perceived as negative attitudes) affect Web Analytics adoption in the organisation.

#### 2.4.6.7 Lack of IT knowledge and expertise

Introducing IT and proper Web services are likely result in many business processes being altered, even radically (Anckar & Walden, 2001). This not just implies organisational challenges, but it also incurs considerable costs by organisations. One of the problems with making effective use of technology in the online marketing industry is the lack of appropriate training. Typically in online marketing SMMEs, the entrepreneurs tend to view training more as a cost than an investment (Anckar & Walden, 2001).

If a Web site does not meet users' requirements, then it will be referenced poorly in search engines. This problem can give rise to information that is useless to a company. If the company lacks expertise in the use of Web Analytics, they will be unaware of this problem. The Internet is a relatively new distribution channel and expertise is limited. Learning often takes place by means of trial and error.

The absence of solid expertise can prove to be an inhibitor to the development of e-commerce and Web Analytics activities (Bègin & Boisvert, 2002). Farhoomand *et al.* (2000) believe that the problem is not with systems, but with insufficient training of personnel. Many company executives are of the opinion that it is mostly teenagers, without credible buying power, who are using the Internet (Farhoomand *et al.*, 2000).

#### 2.4.6.8 Resistance to change

Resistance to change can be severe when restructuring an organisation. Sources of individual resistance include habit, sense of security, economic factors and fear of the unknown. In addition, organisations themselves are conservative inherently and oppose change (Salman, 2004).

#### 2.4.6.9 Lack of management commitment

Lack of top management commitment is still a considerable barrier to the development of electronic trading in many organisations (Farhoomand *et al.*, 2000). An organisation that plans to adopt an electronic trading system has to manage aspects of integrating the new technology during the implementation process.

Many organisations in developing countries would be worried by the thoughts of the massive change management challenges necessary to enter the information age. Another major challenge is to integrate business activities and connect to the Internet era (Salman, 2004). Adjusting the human resources may be socially or politically problematic for a business, including managing workers who need to take training in a computerised technology. Problems may also arise as a result of inefficiencies in corporate information systems analysis and design, or from a lack of top management support.

In summing up the challenges pertaining to Web Analytics, human factors appear to dominate. These include: identifying key stakeholders, identifying the most important Web site visitors, hiring and empowering a full time Web Analyst and a Webmaster; resources, politics, negative attitudes, lack of IT knowledge and expertise, resistance to change and lack of management commitment.

### 2.5 Web Analytics in South Africa (SA)

This study is positioned in South Africa and the organisation's being studied has its head office in the United Kingdom (UK). There is limited published information regarding the status of Web Analytics in South Africa.

Literature, Web sites and business publications were searched for information. This researcher has also made observations, having been involved as an Analyst in an Online Marketing organisation using a commercial Web Analytics package. This section explains how South Africa (SA) fits into the Web Analytics scenario.

Information for this section was gathered from observations made regarding the status of Web Analytics in South Africa (SA) and gathered from the Internet (Quirk eMarketing, Acceleration, Manta SEO Solutions, E-traffic, Search Maestros, Epnetwork) and the Econsultancy. The Econsultancy is a buyers' guide to Web Analytics vendors that is produced annually. The Econsultancy provides useful information and compares the Web Analytics vendors that are operational each year. The 2008 list of vendors is available in Table 2 as an attachment to this document. There may be more vendors in the 2010/2011 Econsultancy guide. The vendors listed in Table 1 are based in the United Kingdom (UK). The vendors from the United Kingdom (UK) have clients that offer Web Analytics services and they have companies that resell the Web Analytics software.

In South Africa there are no well-established vendors that produce their own Web Analytics software. The companies that do offer Web Analytics services in South Africa, for example, Quirk eMarketing, Acceleration, Search Maestros, Manta SEO solutions, Epnetwork and E-traffic, are the resellers of American-based products. The South African resellers then have their own clients worldwide. The South African resellers strive to add some analysis services to the Web Analytics software that they resell, so that they may distinguish their services from the vendors who sell the Web Analytics software directly to clients.

The sequence of events in the adoption and the implementation of Web Analytics is not clearly defined by the South African resellers, because they are also learning the Web Analytics industry which is new to them. The clients who have adopted and implemented Web Analytics (and those who are potential clients) have online buyers worldwide. Figure 2.7 illustrates the Web Analytics scenario.

## **2.6 Background to the observations made**

Research observations were conducted in the online marketing environment to confirm the existence of the Web Analytics adoption framework and the model of the current practice. The main aim of conducting observations was to gain more insight into the field procedures. The online marketing organisation where the observations were conducted invested in one of Omniture's Web Analytics' products as a mechanism to market Web analysis services in South Africa (and globally) via the Internet. The researcher was immersed in the Web Analytics environment. The researcher interacted with various people (namely: Director, Senior Product Manager, Implementation Engineer and Analyst) working in the field of Web Analytics.

## **2.7 Observations of the South African (SA) Web Analytics environment**

One of the points of view from the people involved in Web Analytics was that Web Analytics is about the Web Analytics team providing a service to e-businesses (clients). The main aim is to offer satisfactory services to clients, so that clients may achieve their business goals of converting Web page visitors in customers and of retaining existing customers. However, the researcher observed an interesting fact that when an e-business is not doing well, most of the time the blame is pointed towards technology and the Web site and not towards the people who are responsible for the way the Web site is designed and functions. The people involved in Web Analytics also seem uncertain about the roles that need to be defined for themselves people within, for example in the resellers Web Analytics team. It was established from the inspection of the online marketing environment that in South Africa there are no well-established vendors that produce their own Web Analytics software. The stakeholders of Web Analytics feel that more research needs to be done in the area of Web Analytics in South Africa as it is still in a formative stage in South Africa. According to the observations made, South Africa has been slow to adopt Web Analytics and is still hesitant about using Web Analytics as an e-business strategy. The researcher further observed that while some organisations, for example Kalahari.net and SA Tourism, are exploring the advantages of Web Analytics, others have lack of knowledge about the strategies of Web Analytics. There is a need for a Web Analytics adoption framework.



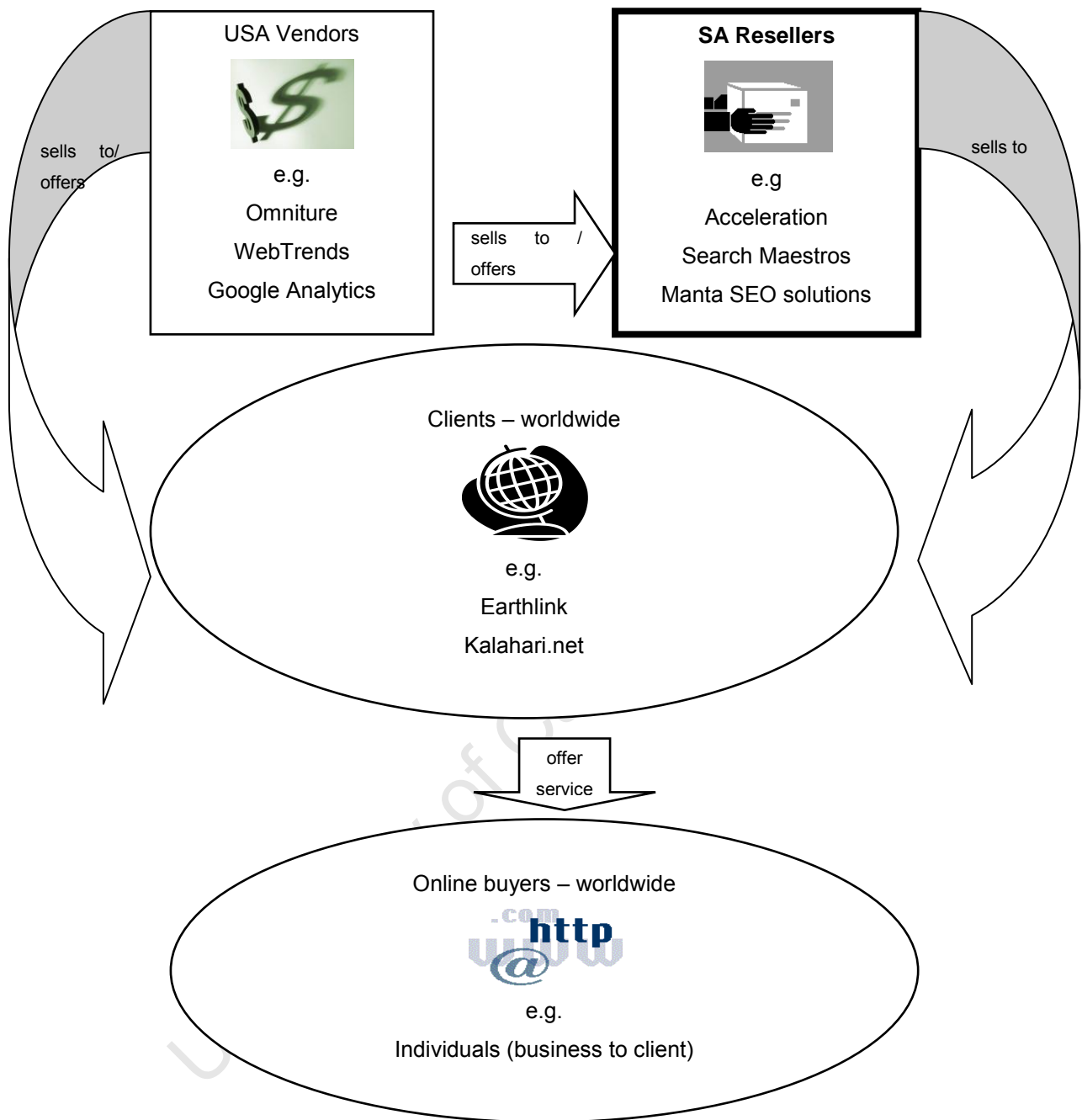


Figure 2.7: Web Analytics scenario

The observations confirm that there are challenges in South Africa with regard to the adoption, implementation and maintenance of Web Analytics services within the reseller market. Further research should be conducted with regard to the other key stakeholders of Web Analytics. The resellers and the clients of the resellers should be interviewed.

## **2.8 Web Analytics in the United Kingdom (UK)**

The organisation chosen for the study has offices in South Africa and the United Kingdom (UK). Business publications, qualitative interviews, grounded action research and participatory observations conducted for this study describe some aspects of Web Analytics in the United Kingdom. These aspects are described and explored further in chapter four.

## **2.9 Comparison between South African and the United Kingdom Web Analytics**

In the late nineties in South Africa, e-commerce Web sites were launched (Goldstuck, 2004). According to a Director of Online Analytics and a Senior Product Manager at Acceleration in 2005, Web Analytics tools were initially marketed and were sold to companies with e-commerce Web sites, because it was easier to justify the need for Web Analytics tools when implemented on an e-commerce Web site. Later, the resellers of Web Analytics approached companies with other types of Web sites, such as, lead generation Web sites, support Web sites and media Web sites. An International Survey Organisation predicted that during 1999 online shoppers in South Africa would spend 443 million US Dollars in Internet-generated purchases (Esselaar & Miller, 2001). The Goldstuck Report (2004) stated a different measure of about 16.5 million South African Rands in online sales during 1999. There has been a massive increase in the number of available e-commerce platforms based on business operations since that time. The e-commerce platforms are also available in developing countries, and here there is a steady growth of e-commerce (UNCTAD, 2002). In 2001, European Web Analytics vendors, such as, Clickstream Technologies, Intellitracker Limited, Lumio, Mtracking Technologies, Nedstat, Site Intelligence, Web Abacus, became known, but concentrated on selling within Europe, and did not spread their marketing efforts into the United States of America (Ballardvale, 2004). The researcher does not know of any known South African produced Web Analytics software packages. Based on informal conversations with some Web Analytics industry experts, who were part of the Acceleration Online Analytics team in 2005 and 2006, in South Africa, Acceleration was one of the first organisations that had the exclusive right to resell Omniture's SiteCatalyst (American commercial Web Analytics package).

In 2009, Quirk eMarketing was the company in Africa offering support services in Google Analytics. According to an interview with the Head of Digital in one of the biggest financial services providers in South Africa in 2011, Google Analytics is the most adopted Web Analytics package in South Africa, because it is free. The economic position of South Africa, being a developing country tends to drive organisations towards the free Web Analytics packages and tools. According to a formal interview with the Head of the Online Team in the organisation of the study, who is based in the United Kingdom, organisations there tend to choose commercial Web Analytics packages and tools. As mentioned above, Europe has developed their own Web Analytics packages although they do use some of the American commercial Web Analytics packages. According to a formal interview with the Head of Web Analytics in 2008 and 2009, at Google Incorporated at Silicon Valley in San Francisco, Google Analytics has approximately 80% of the functionalities that commercial Web Analytics packages have. By being open to suggestions from and recommendations of Google Analytics users, Google Inc. is able to add more functions to its package. The total spent on online sales in South Africa in 2003 was R341-million. This was a little more than double the amount reported for 2001, namely R162-million, but up 35% on 2002 (Goldstuck Report, 2004).

## **2.10 The importance of Web Analytics in research**

It is important to have more Web Analytics literature so that the recently formulated discipline may become more established. It is essential to identify the persistent Web Analytics problems so that more scientists and practitioners may find solutions to eradicate or minimise them. There is a need to explore how to position Web Analytics within an existing and an established domain, so that discipline may comprehend better.

## **2.11 Theoretical themes**

Research into technology-based innovation has been prolific (Elliot & Loebbecke, 2000). The theoretical guidelines suggested by these authors (Daniel & Wilson 2002; Daniel, 2003) postulate that intentions or drivers in an organisation result in the adoption of e-commerce being considered.

Such an adoption and its implementation enhance the Web Analytics model for a Web site. The objectives of Daniel and Wilson's (2002) study are primarily to:

- identify the reasons that are most important in the adoption of e-commerce by SMMEs (adoption intentions)
- identify the benefits they are realising from their e-commerce developments
- determine if the areas identified as important are indeed those where benefits are being realised after the implementation phase

### 2.11.1 A Web Analytics mind map for an e-commerce Web site

Figure 2.11.1.1 is from Driver and Louveris (1998) and is useful for a Web Analytics study specifically for an e-commerce Web site. According to Driver and Louveris (1998), Figure 2.10.1.2 gives various degrees of detail both of state situations and support processes. For the people/philosophy situation there is an organisational context, aspects of which are given for the company. These may be viewed in at least two senses: the socio-cultural conventions and operating climate of marketing, and in another sense, the formal regulatory controlling organisations which have power in turn to affect the power of the reference company (Driver & Louveris, 1998). Information, which is currently shown in connection with the organisation, could be elaborated in many ways with the stages and could include feedback (Driver & Louveris, 1998).

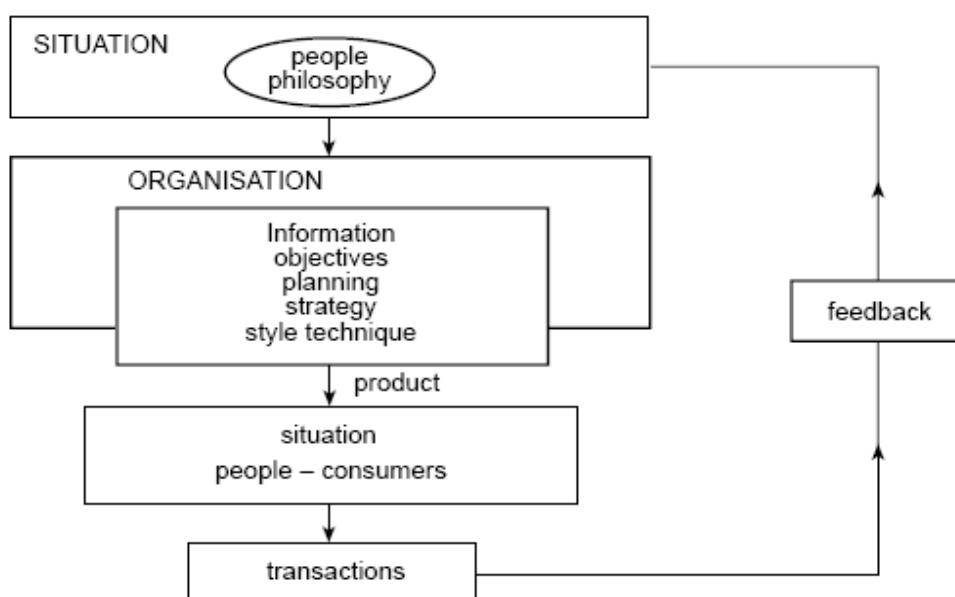


Figure 2.11.1.1: A simplified marketing sequence (Driver & Louveris, 1998)

The main thoughts this author has regarding Web Analytics are: the importance of people, problems within the practice and an optimised Web Analytics strategy (see figure 2.11.1). These thoughts were formulated before literature sensitivity was investigated, because of the researcher's involvement in Web Analytics within the industry. The themes below are based on the researcher's questions regarding Web Analytics. Literature confirmed some of these thoughts and inquiries regarding this topic.

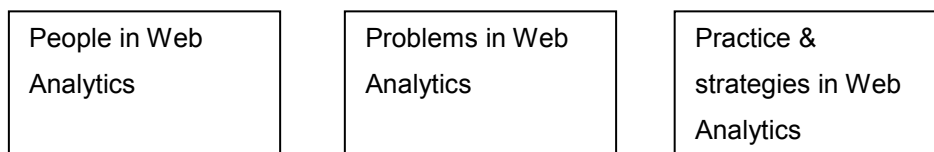


Figure 2.11.1: Initial themes of Web Analytics from the author (three P's of Web Analytics inspection)

The people, the challenges and the practice are added as phases of the proposed Web Analytics themes, below in Figure 2.11.1.2. There exists a situation with an organisational practice, which may be problematic. Web Analytics may not have been adopted nor implemented. People are involved from the beginning of the situation and in every stage of the framework.

The organisation has its information, objectives, planning sessions, strategy and the manner in which they do things. General organisational challenges exist as well. An organisation may decide to adopt and implement Web Analytics. The decision comes with adoption and implementation challenges.

A Web Analytics strategy should provide guidance on specific actions for customer acquisition and customer retention. An important challenge to Web Analytics adoption appears to be the unwillingness of managers to be responsible for technological change (Simpson & Docherty, 2004).

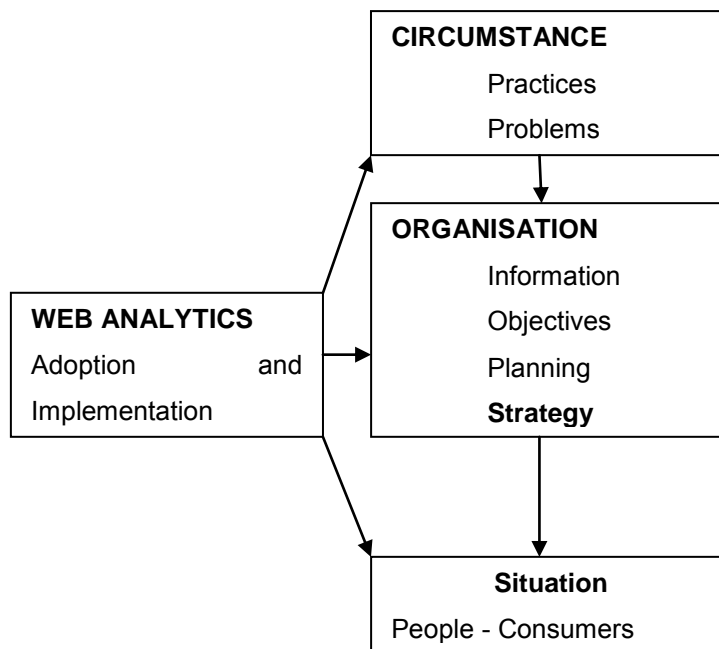


Figure 2.11.1.2: Initial Web Analytics themes for an e-commerce Web site (Dakela, Seymour, 2008)

There are two approaches of grounded theory that have emerged since its inception. There may be uncertainty regarding differences that now exist between approaches of Glaser and Strauss, who together first described the method (Heath & Cowley, 2003). In chapter three, the researcher discusses four grounded theory approaches suggested by Matavire and Brown (2008).

Glaser and Strauss both acknowledge that the researcher will not enter the field without thoughts about the subject; however the researcher is open-minded about appreciating new connotations (Heath & Cowley, 2003). For Glaser, learning not to know is essential to maintaining sensitivity to data. For Strauss both use of self and literature are early influences and, while distributed understandings from past experience and literature may be used to inspire theoretical sensitivity and generate hypotheses, learning not to know is not essential (Heath & Cowley, 2003). The Straussian approach to grounded theory is followed in this study regarding the literature sensitivity that is used to confirm the researcher's thoughts. The researcher has been involved in Web Analytics in practice and has been reading Web Analytics literature before embarking on PhD in Information Systems. In chapter three, the researcher's bias is acknowledged and grounded theory approaches are dealt with in detail.

Emergence retains a place in Straussian grounded theory which also indicates that ideas or hypotheses generated will be dropped if their importance fails to materialise in the data; however for Glaser, it is data that develops theoretical sensitivity (Heath & Cowley, 2003). Glaser does not agree with asking a lot of questions and suppositions about what might be, rather than what exists, in the data, while Strauss maintains that the function of induction should not be over-emphasised (Heath & Cowley, 2003). As mentioned above, the Straussian grounded theory approach has been applied in the study, because the researcher and the literature have been early influences in the study. The next chapter will elaborate on this aspect.

## 2.12 Summary

Chapter two described and explored the relevance of each section in relation to Web Analytics. The subjects of e-commerce and e-business were explored, because there is a general perception that every e-commerce Web site should implement Web Analytics. The initial discussions concerned the differences and the similarities between definitions of e-commerce and e-business. Some authors define them as two different concepts while another author defines them as the same concept. The eight e-business principles, described above, in chapter two, persuade organisations with an e-commerce aspect to seriously consider investing in adopting and implementing advanced Web Analytics. The following types of Web site would find relevance in adopting and implementing Web Analytics: media, online storefronts, lead generation, incentives Web sites and search agents. Although there are Web site types that would not survive without Web Analytics, there are some that may not need Web Analytics to thrive. As mentioned above, some e-commerce Web sites may not necessarily require Web Analytics adoption and implementation. The current practice of measuring quantitative and qualitative metrics is growing. Not only is this practice growing, but the technical challenges, organisational adoption challenges and implementation challenges are also growing. These challenges in turn affect the people involved in Web Analytics who, amongst other challenges are grappling with understanding their roles. An important challenge to Web Analytics adoption appears to be the unwillingness of managers to be responsible for technological change. Another challenge pertaining to this particular study are virtual teams geographically located in South Africa and in the United Kingdom. Web Analytics in SA and in the UK is described and explored.

At the beginning the proposed themes for the study were simply to establish guidelines for exploring the research area further. The most important outcome of the overview of the literature was to clarify the aims or objectives of this research by leading to the development of themes to guide the study and help formulate the research questions. Even though the research questions are stated in the previous chapter, the development of the questions did not take place in a sequential manner.

Chapter two in this study reviewed the literature sensitivity for the grounded action research methodology selected for this study, which is discussed in the next chapter. The literature sensitivity, which is appropriate in the case of grounded action research, helped to put this research into perspective. In other words, it helped in the evaluation of this research by comparing it to similar research. The next chapter, the research design, is the crux of this study.

University of Cape Town



## CHAPTER THREE

|          |  |           |
|----------|--|-----------|
| <b>3</b> | <b>RESEARCH DESIGN .....</b>   | <b>65</b> |
| 3.1      | Introduction .....   | 65        |
| 3.2      | Contextual factors impacting on Research Design.....                                     | 66        |
| 3.3      | Philosophical assumptions.....   | 70        |
| 3.3.1    | Ontological assumptions.....   | 70        |
| 3.3.2    | Epistemological assumptions.....   | 71        |
| 3.3.3    | Assumptions regarding human nature .....   | 72        |
| 3.3.4    | Methodological assumptions.....  | 73        |
| 3.3.5    | Research paradigms.....  | 73        |
| 3.4      | Topic area of interest .....   | 75        |
| 3.4.1    | Description of Web Analytics .....   | 75        |
| 3.4.2    | Importance of Web Analytics .....  | 75        |
| 3.4.3    | Persistent problem statement and goals of research .....                                 | 76        |
| 3.5      | Idea Context.....  | 76        |
| 3.5.1    | Personal experience in the Online Analytics division – in the previous organisation..... | 77        |
| 3.5.2    | Selection of an organisation for the study – current organisation....                    | 79        |
| 3.6      | Methods .....  | 81        |
| 3.6.1    | Action research.....   | 82        |
| 3.6.2    | Grounded theory.....   | 84        |
| 3.6.3    | Grounded action research selected for the study over other methods                       | 87        |
| 3.6.4    | Data collection .....  | 88        |
| 3.6.4.1  | Background to data collection in the first case organization .....                       | 89        |
| 3.6.4.2  | Background to data collection in the second case organization ...                        | 95        |
| 3.6.4.3  | Background of business owners and Web Analytics experts .....                            | 96        |
| 3.6.4.4  | Primary data sources .....   | 99        |
| 3.6.4.5  | Secondary data sources.....  | 103       |
| 3.6.5    | Data Analysis.....   | 103       |
| 3.6.5.1  | Open Coding .....  | 105       |
| 3.6.5.2  | Axial Coding .....   | 106       |
| 3.6.5.3  | Selective Coding .....   | 107       |
| 3.6.5.4  | HyperRESEARCH 2.81 Software.....   | 107       |

---

|        |  |     |
|--------|--|-----|
| 3.7    | Role of the researcher.....  | 108 |
| 3.8    | Bias in research .....   | 110 |
| 3.9    | Research question formulation .....                                | 110 |
| 3.9.1  | Broad categories identified from literature sensitivity .....      | 110 |
| 3.9.2  | Organisation.....  | 111 |
| 3.9.3  | Adoption and / or Implementation .....                             | 111 |
| 3.9.4  | Challenges .....   | 112 |
| 3.9.5  | Practice .....   | 112 |
| 3.9.6  | People.....  | 113 |
| 3.9.1  | Primary research question .....                                    | 113 |
| 3.9.2  | Secondary research question .....                                  | 113 |
| 3.10   | Role of Human Subjects and Ethics in Social Science Research ..... | 114 |
| 3.11   | Generalisability .....   | 114 |
| 3.12   | Credibility and dependability .....                                | 120 |
| 3.13   | An overview of action research .....                               | 120 |
| 3.13.1 | Initiation .....   | 123 |
| 3.13.2 | First iteration .....  | 123 |
| 3.13.3 | Second iteration .....   | 124 |
| 3.13.4 | Third iteration .....  | 125 |
| 3.13.5 | Fourth iteration.....  | 125 |
| 3.14   | Summary.....   | 128 |

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### 3 RESEARCH DESIGN

#### 3.1 Introduction

In chapter two the relationships between concepts proposed at the outset were not clearly delineated, however in chapter three these relationships are developing. The approach used in this research is primarily qualitative in order to provide opportunities for an in-depth exploration of the viewpoints of Web Analytics stakeholders during the early stages of the adoption process. The approach used also gives the researcher an opportunity to gain a better understanding of any problems and the prevailing practice. The motivation for using qualitative research to guide this study, as opposed to using solely quantitative research, is based on the ability to conduct in-depth interviews with respondents in order to obtain a deeper understanding of Web Analytics in its own context.

The qualitative research design is flexible and has interrelated elements. The five major elements of the research design are:

- topic area of interest,
- idea context,
- research questions,
- methods, and credibility
- and dependability.

These five major elements of the research design are described and illustrated, together with the associated philosophical assumptions and research paradigms. It is important to mention the philosophical assumptions that have been used in this study and to declare the personal bias that sometimes researchers erroneously claim does not exist. A combination of interpretive and radical humanist paradigms was used for this study, because, in practice, Web Analytics challenges are multi-faceted, ranging from stability to radical change, rarely allowing people to study them within a single paradigm.

Data was collected from primary and secondary data sources. The primary data came from interviews which were conducted in an organisation adopting and implementing Web Analytics. The secondary data sources mainly came from sources publications, which include the organisation's Web sites (including micro-sites), business articles, observations, minutes from meetings, Web Analytics online courses (specifically University of British Columbia's Introduction to Web Analytics and Google Analytics' Conversion University), and Web Analytics books. The secondary data sources assisted in addressing the fact that each interview respondent may have had their own interpretations of the context and some may even have had a misinformed point of view. It was found useful to use other texts in the organisation phase of the study and then to use the broader Web Analytics literature for the interpretation phase.

### **3.2 Contextual factors impacting on Research Design**

Qualitative research methods are designed to assist researchers to understand people and the social and cultural contexts within which they live (Myers, 1997). There is increasing acknowledgement, not exclusively in academic circles but also among marketing practitioners, of the need for the application of qualitative methodologies in their most essential sense in order to gain valid insights, develop theory and aid effective decision making (Goulding, 2005). Quantitative research methods were also used in some parts of this study. Basic descriptive statistics was used for the analysis of the majority of the qualitative research outcomes.

Research design, in a qualitative study, entails the expansion and amendment assumption, data gathering and data analysis, clarification and refocusing of research questions, and the discovery of credibility and dependability risks (Maxwell, 2004). These components of qualitative research design are more often than not taking place relatively concurrently each impacting on others. This practice is not sufficiently illustrated in series, even one that allows iteration, because, in qualitative research, there is no regular sequence in which the diverse components or undertakings must be illustrated (Maxwell, 2004).

There have been notable developments in research approaches. Creswell (2003) focuses on three research approaches, amongst others, namely quantitative, qualitative and mixed methods. In quantitative research (Creswell, 2003), researchers advance the relationships between variables and express these in terms of questions and hypotheses. Unlike quantitative research, qualitative research (Strauss & Corbin, 1998) is any type of research that produces findings not arrived at by numerical procedures or other means of quantification. Strauss and Corbin (1998) further elaborate that it can refer to research about people's lives, lived experiences, behaviours, emotions, and feelings as well as about organisational functioning, social movements, cultural phenomena, and interactions between nations. Qualitative methods were developed in the social sciences to enable researchers to study social and cultural phenomena (Myers, 1997).

Quantitative and qualitative research methods have been used extensively. Mixed method procedures are new developments in the approach to research. They include using various research approaches simultaneously, such as, triangulation, and sequential explanatory design (Creswell, 2003). Figure 3.2(a) illustrates contextual factors influencing Maxwell's research design.

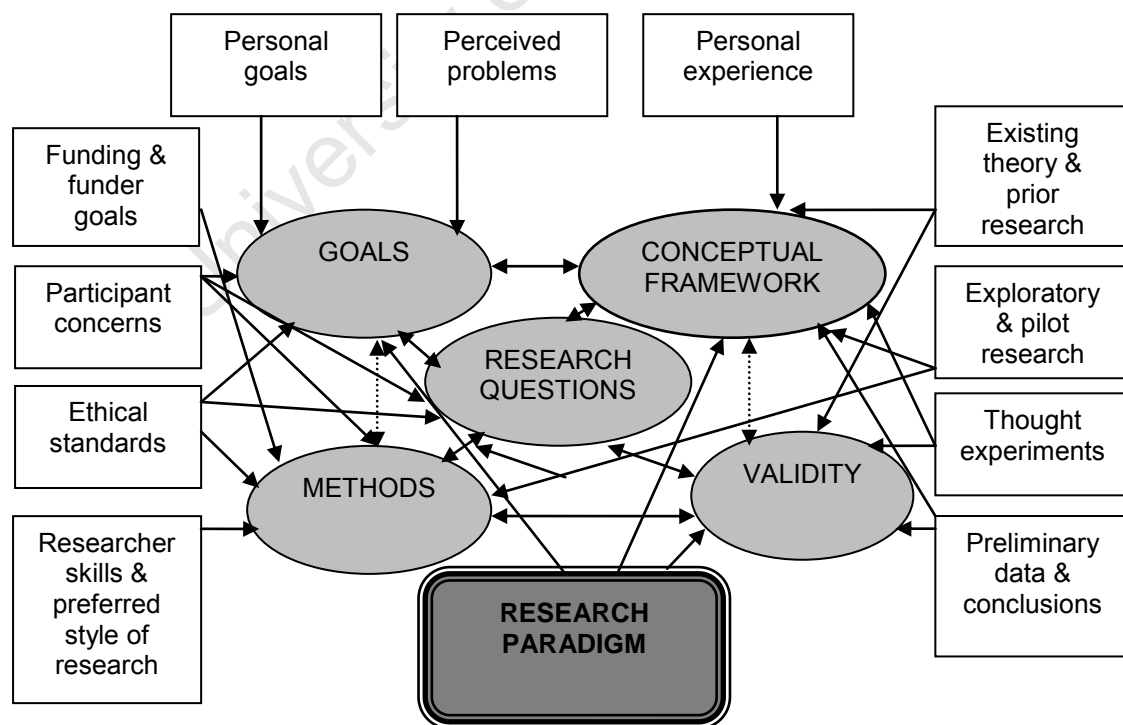


Figure 3.2(a) Contextual factors influencing research design (Maxwell, 2004: 6)

The major components of research design described by Maxwell (2004) are goals, conceptual framework, research questions, methods and validity. The research design used in this study has been adapted from Maxwell (2004) and it incorporates Burrell and Morgan's (1979) philosophical assumptions together with the research paradigms, which impact on the components of this study discussed below, and illustrated in Figure 3.2(b).

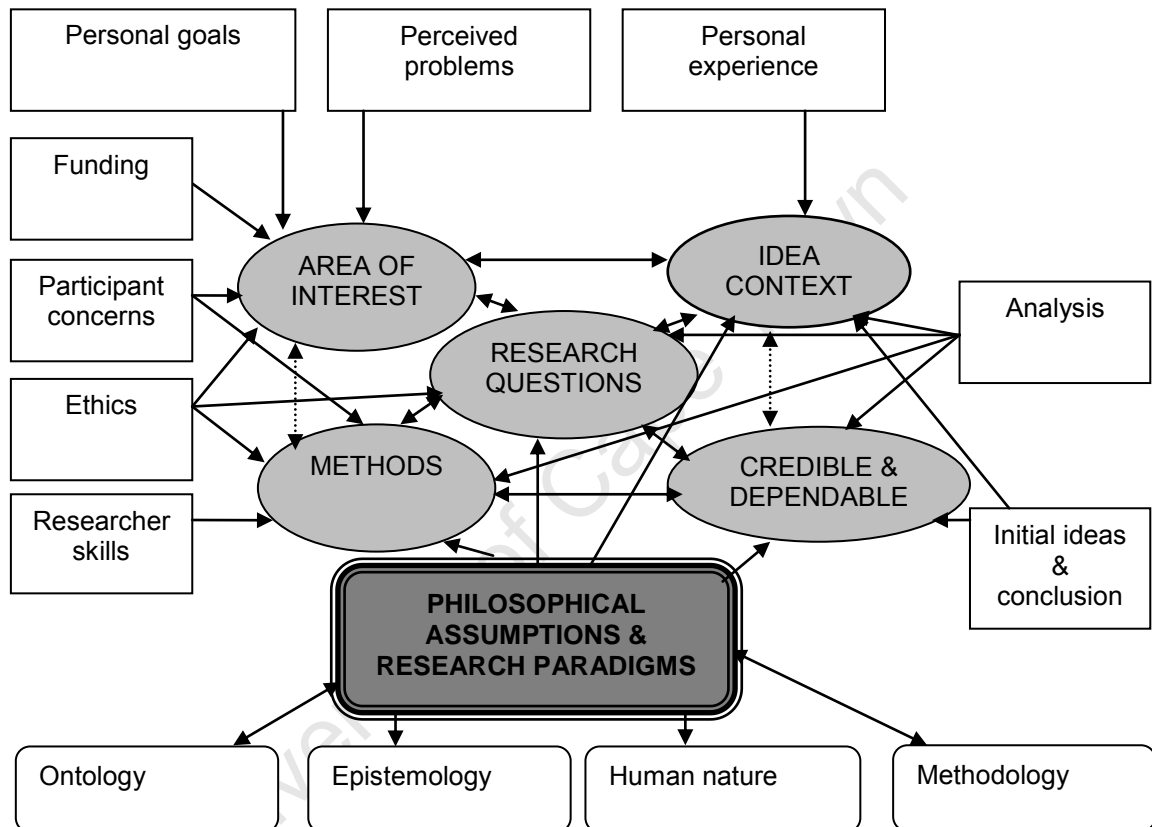


Figure 3.2(b) Contextual factors impacting the design for the study with philosophical assumptions and research paradigm (Adapted from, Maxwell, 2004: 6 and Burrell & Morgan, 1979)

The research design is flexible and has interrelated elements. The five major elements of the research design are:

1. **Area of interest.** In this element, as noted in chapter one, a description of the area of interest with appropriate citations is provided. The reasons why this is a compelling area to investigate are stated. The hoped for achievements from doing this research are stated (Ngwenyama, 2009a).

2. **Idea context.** In this element, the researcher's ideas with regard to what is thought to be going on in the area of Web Analytics, the selected organisation, and/or the people involved in Web Analytics, are explained.
3. **Research questions.** In this element, as noted in chapter one, both a primary question and a secondary question are stated. The perspective from which the question investigated is also stated (Ngwenyama, 2009a).
4. **Methods.** In this element what will actually be done to conduct this study, is stated. The ways and techniques that will be used to collect and analyse the data, are also described.
5. **Credibility and dependability.** In this element there is a discussion about how the results might be questioned. Plausible alternative interpretations and the validity of threats to these are explored, together with ways of dealing with validity threats. Finally there is justification of why the results are consistent and why they can be trusted.

The 'Goals' component referred to in Figure 3.2b has been modified to be 'Area of Interest' in this study, because the researcher decided to choose a theme area of interest instead of just embarking on a study to align results to some pre-defined goals. The researcher asked: Whose goals are these? Are they the funders or the institution's department? Are they flexible enough to incorporate personal goals? The researcher certainly knows that the topic area of interest will incorporate personal goals. The 'Conceptual Framework' as mentioned in Figure 3.2b has been modified to be 'Idea Context', because grounded action research is the method that has been selected for this study and a limited literature review has been conducted. There have been no theories, nor prior research findings, and preliminary studies were not examined extensively. The 'Validity' component has been amended to 'credibility', and by adding 'dependability', it has become 'Credibility and Dependability', even though the results of the study may be legitimate, it was necessary to ensure that the results are consistent and that they can be trusted. It was necessary to learn skills to actually conduct the methods selected. This meant understanding the canons, principles, guidelines and limitations of the selected methods.

There are many other aspects influencing research design that should be taken into account. These aspects include resources, research skills, perceived problems, ethics, research environment, gathered data and results representing gathered data (Maxwell, 2004). The research proposal was assessed by the Ethics committee and met the requirements of 'informed consent' and ethical treatment of human subjects. After the ethics review, the study was cleared for the data collection phase. There were no apparent participant concerns. The organisation selected for the study agreed to certain requirements by signing a research participation letter. A condition of the funding received, was that the research should be linked to any topic area of interest within Information systems. The researcher's personal goal of gaining a fundamental understanding of Web Analytics was incorporated in the topic area of interest.

There was a question about whether Web Analytics can be regarded as a substantial PhD topic and about whether this topic should be classified as Information systems or Marketing. These were some of the perceived problems with the topic. Having worked as a Web analyst before, the researcher had encountered some concerns with some Web Analytics practices. There were concerns regarding the context. Personal experience influenced the research environment was to be investigated. Data gathering and analysis took place on the premises of the selected organisation. The initial ideas, the conclusions and the gap between the two had to stand up to the validation criteria and reliability procedures. Philosophical assumptions influence the above-mentioned elements of qualitative research design. The following section discusses perspectives that significantly inform this study.

### **3.3 Philosophical assumptions**

#### **3.3.1 Ontological assumptions**

The ontological assumptions require that the researcher to determine whether Web Analytics mature, formulated and exists in the mind, or whether it is created, exists outside the mind and is striving to capture the researcher's attention (Burrell & Morgan, 1979). The ontological debate is referred to as the nominalist-realist debate. The nominalist assumes that there is no real unchangeable structure 'outside' a person's mind.



The person formulates structures by naming, labeling or defining phenomena (Burrell & Morgan, 1979; Roode, 1993). These structures are continually recreated as the person's experiences, and the individual tries to make sense out of, the disorganisation confronting them. The realist, in contrast, sees the real world as separate and independent of the person's perception (Burrell & Morgan, 1979; Roode, 1993). These unchangeable structures exist 'somewhere in the universe'. The social world that needs to be studied has a reality of its own and, seen ontologically, existed prior to the perception of any person (Roode, 1993).

The nominalist view is used in this study, because Web Analytics players, and the researcher is one, have defined some guidelines shaping the structure of the current practice in Web Analytics. However these guidelines keep changing and evolving, while the people involved in Web Analytics try to understand the lack of frameworks and informative models in their environment.

### **3.3.2 Epistemological assumptions**

The epistemological assumptions are about how the knowledge about the Web Analytics topic under investigation is constructed. These assumptions are also about how deep the research goes in the chosen environment, and how knowledge thus obtained is conveyed to other people. It was necessary to determine whether the researcher's knowledge is something that can be obtained or if it is something that has to be practised (Burrell & Morgan, 1979). The epistemological debate refers to anti-positivism versus positivism debate. Anti-positivism includes interpretive and critical research; it is the research that excludes positivistic research.

Qualitative research can be positivist, interpretive, or critical and it follows from this that the choice of a specific qualitative research method is independent of the underlying philosophical position adopted (Myers, 1997).

Firstly, positivists generally assume that reality is objectively given and can be described by measurable properties which are independent of the observer (researcher) and his or her instruments (Orlikowski & Baroudi, 1991).

Secondly, the interpretive research looks at 'reality' from a different perspective to that of the positivist research. An interpretive approach can help the researcher to gain knowledge of reality through social constructions such as language, shared meanings, tools, and documents (Walsham, 1995).

Thirdly and lastly, in critical research, the investigation is classified as emancipative if it aims to help eliminate the causes of unwarranted alienation and domination, and thereby enhance the opportunities for the realisation of human potential (Hirschheim & Klein, 1994).

This study is interpretive and is aimed at major team players in the Online Team and some key Web Analytics stakeholders of the selected organisation. It aims at providing opportunities for the thorough investigation of opinions in the early stages of the adoption process, allowing the researcher to participate while gaining a better understanding of problems and identifying attitudes and influences. The anti-positivistic assumption was selected because it assisted the researcher to gain knowledge of reality through social constructions, which involved questions about the people practicing in the Web Analytics field, in the environment in which they work.

### **3.3.3 Assumptions regarding human nature**

The assumptions regarding human nature are about the association between people and the premises of the selected organisation, called the research environment (Burrell & Morgan, 1979). The 'human nature' debate is referred to as the voluntarism-determinism debate. A voluntarist assumes that a person is a free moral agent with his/her own will (Burrell & Morgan, 1979). In contrast, a determinist view assumes that a person's actions are determined by the environment he/she works in (Burrell & Morgan, 1979).

In this study, each person is considered to have with a free will to make choices and to justify why those choices were made in the organisation they work for. Participants in the study were informed that they have a right to challenge the status quo in the workplace and question any aspect of this study.

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### 3.3.4 Methodological assumptions

The methodological assumptions are about procedures that are characterised as inductive, emerging and shaped by the experience of the researcher while collecting and analysing data (Creswell, 2003). The methodological debate is referred to as the ideographic-nomothetic debate. The idiographic view assumes that one can understand the social world by getting as close as possible to the participants being studied (Burrell & Morgan, 1979). The nomothetic view assumes that research is based on strict rules and regulations.

This study is supported by the idiographic view, because the practice of the researcher was to emphasise the analysis of subjective accounts which entailed attending weekly meetings, participating in projects and being involved myself in the day-to-day activities of the organisation. In this study the researcher is in the research environment and makes interpretations from the perspective of the research participants.

The main focus was on Web Analytics within the organisation. The secondary focus was on the perceptions the research participants have about Web Analytics. The interpretations were confirmed with the research participants within the organisation of the study. Meaning in this study was considered to be embedded in the social context (Ngwenyama, 2009b).

### 3.3.5 Research paradigms

There are many research paradigms. Burrell and Morgan (1979) discuss four Information systems paradigms, namely the functionalist paradigm, the interpretive paradigm, the radical humanist paradigm and the radical structuralist paradigm.

The following four paragraphs define the above mentioned paradigms:

The functionalist paradigm to social science assumes that the social world is made up of quite tangible experimental objects and associations which can be recognised, calculated and measured through ways taken from the natural sciences. The use of mechanical and biological correlations as a means of modeling and understanding the social world is preferred in many of the functionalist theories (Roode, 1993).

The interpretive paradigm is illustrated by a need to understand the world as it is, to understand the essential nature of the social world at the level of subjective practice. It seeks clarification within the realm of a person and subjectivity, within the context of the contributor rather than the spectator of activity (Roode, 1993).

The radical humanist paradigm has much in common with the interpretive paradigm, in that it views the social world from a perspective which is likely to be nominalist, anti-positivist and ideographic. However, its context is dedicated to a view of society which emphasises the significance of pushing beyond the boundaries of existing social arrangements (Roode, 1993). Figure 3.3.5 below portrays a two-dimensional view from subjectivity to objectivity (left to right) and from stability to chaos (bottom up). It also depicts the four paradigms for the analysis of social theory.

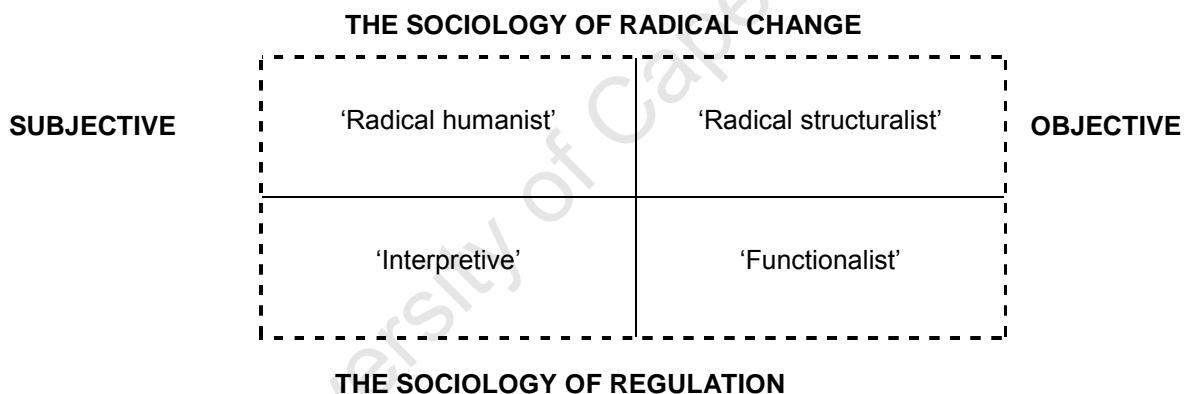


Figure 3.3.5 Four paradigms for the analysis of social theory (Burrell & Morgan, 1979)

Whilst discussing a practice in science which has many similarities with that of functionalist theory, the radical structuralist paradigm is aimed at very different ends. Whereas the radical humanists form their perspective by focusing upon consciousness as the basis for a radical critique of society, radical structuralists concentrate upon structural relationships within a realist social world. They emphasise the fact that radical change is built into the very nature and structure of contemporary society, and they seek to provide explanations of the basic interrelationships within the context of total social formations (Roode, 1993).

A combination of interpretive and radical humanist paradigms was used for this study, because, in practice, Web Analytics challenges are multi-faceted, ranging from stability to radical change, rarely allowing people to study them within a single paradigm (Roode, 1993). A multi-paradigmatic approach is often indicated or required (Roode, 1993). For this study a multi-paradigmatic approach was explored. The field of Web Analytics was studied at a subjective level because of its dynamic nature which involves statistics (regulated) and online customer behaviour (evolving), and because the researcher has participated as an Analyst, using Web Analytics tools in the research environment.

### **3.4 Topic area of interest**

#### **3.4.1 Description of Web Analytics**

As defined in chapter one, Web Analytics is an evaluative practice coming from and motivated by e-businesses or organisations with online facets and a requirement to find benefits from knowing the usage of their Web sites and strategies therein (Phippen, 2004; Phippen, Sheppard & Furnell, 2004). Advanced Web Analytics is observing and reporting Web site usage so that e-businesses or organisations with online facets can better understand multifaceted connections between Web site user behaviour patterns and Web site services in order to influence the knowledge that will help to optimise the Web site for increased customer acquisition, increased customer retention and increased sales (Phippen, 2004; Phippen *et al*, 2004).

#### **3.4.2 Importance of Web Analytics**

Web Analytics is seen to be significant for customer acquisition, customer retention, converting online visitors to repeat visitors, influencing return on investment (ROI), planning and strategising a customer-centric technique for Web site performance (Ballardvale, 2004; Phippen, 2004; Phippen, Sheppard & Furnell, 2004; Peterson, 2004; Sterne, 2004; Kaushik, 2007). Therefore the lack of research, suitable practice and adoption frameworks are seen as important requirements and are some of the challenges that this study proposed to address (Dakela & Seymour, 2008).

### **3.4.3 Persistent problem statement and goals of research**

Some organisations are still experiencing challenges when it comes to the adoption of Web Analytics, this may be because they do not have sufficient strategies and guidelines for conducting its implementation (Weischedel *et al.*, 2005). A possible reason for this situation could be that there are few suitable frameworks available that will help, either to start a new Web Analytics business unit or even to use an existing Web Analytics business unit to transform existing e-businesses (Weischedel *et al.*, 2005; Dakela, 2006).

Chapter one mentioned that this study hopes to add value to the body of theoretical knowledge in the area of Web Analytics adoption and implementation. The study intends to assist and inspire South African businesses (especially Small and Medium Enterprises - SMEs) with innovative Web Analytics concepts at the digital business intelligence level. The study hopes to produce a Web Analytics framework that would assist in engaging the relevant people at each stage of offering e-business solutions. The businesses will be made aware of the Web Analytics framework to enhance business strategies and be encouraged to adopt and implement Web Analytics with reduced risk of not succeeding in their business ventures.

The study explores the possibility that Web Analytics is being a subset of a decision support system. This is because it is important that Web Analytics be contextualised or the name be changed, or both. However the debate continues with regard to this issue, especially amongst Web Analytics practitioners.

### **3.5 Idea Context**

The idea context section below includes

- personal experience using an informal review, and
- the selection of the organisation for the study.

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### **3.5.1 Personal experience in the Online Analytics division – in the previous organisation**

As already stated, the aim of this thesis is to better understand the interplay between the human and non-human elements in the adoption and implementation of Web Analytics. This aim entails a detailed study of what Web Analytics maturity is and encompasses, understanding the challenges, the practices and the roles of the people involved in Web Analytics. The researcher has worked as an Analyst in an Online Analytics team before and has observed many challenges, including the very basic uncertainty of whether to call the topic of interest Online Analytics or Web Analytics.

While working in the Online Analytics team, as it was called in the previous organisation, observations and an informal review were conducted. The main aim of conducting the informal review was to gain more insight into field procedures and to listen to the people involved in Web Analytics, while observing them in their work environment (Dakela, 2006). This informal review also provided additional explanations with regard to challenges, current practices, and the roles of people in Web Analytics in a broader organisational context.

This informal review was conducted in the online marketing environment to determine, firstly, if the selected research method would be suitable for this type of research targeting the online marketing sector and, secondly, to discover whether any Web Analytics any adoption methodologies were used in current practice.

The organisation invested in one of Omniture's Web Analytics' products as a mechanism to market Web Analysis services in South Africa (and globally) via the Internet. While working in the Web Analytics environment, the researcher was able to interact with several team members, namely the Director, the Senior Product Manager, the Implementation Engineer and the Analyst, working in the field of Web Analytics.

One of the points of view that emerged from the people was that Web Analytics is about the Web Analytics team providing a service to e-businesses (clients). The whole point of the exercise is that the team as a whole is offering satisfactory services to clients, so that clients may achieve their business goals of converting Web page visitors to customers while, at the same time, retaining existing customers.

It was established from the preliminary review that in South Africa there are no well-established vendors that produce their own Web Analytics software. It was interesting to that when an e-business is not doing well, most of the time it is the Web site that is blamed. The Web site does not emerge on its own; there are people who are responsible for the way the Web site is designed and the way it functions. Thus the relevance of people in Web Analytics needs to be emphasised.

The stakeholders of Web Analytics assumed that more research needs to be done in the area of Web Analytics in South Africa. There was agreement among the people interviewed (Director, Senior Product Manager, Implementation Engineer and Analyst working in the field of Web Analytics) that Web Analytics is still in its initial stages in South Africa with regard to fundamental matters.

The informal review confirmed that there are challenges in South Africa with regard to adoption, implementation and maintenance of Web Analytics services within resellers and not only for organisations that have adopted but also implemented them. The people involved in Web Analytics seemed uncertain about the roles and they felt that it would be very helpful if roles could be defined for the people within a Web Analytics team of resellers. This led to more uncertainty with regard to the job description(s) of the people who needed to be recruited for the resellers' Web Analytics team. It was evident that further research should be conducted with regard to the other key stakeholders of Web Analytics. Having gained this experience, the researcher was keen to contribute to and participate in this much needed research.



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### 3.5.2 Selection of an organisation for the study – current organisation

Analytix Trailblazer Incorporated (*pseudo name*), is a joint venture owned equally between Analytix in the United Kingdom (UK) and Trailblazer in South Africa (SA). Both partners have contributed very different ways to the creation of the business, which was formed in October 2004. Analytix Trailblazer's purpose is to promote financial well-being of their customers and their families, with a particular focus on saving for retirement and security in retirement, whereas Trailblazer provides innovative and unique financial services, which integrate with a trend-setting wellness programme. Analytix Trailblazer Incorporated, the organisation in which the study was conducted, is a personal health insurance (or personal medical insurance) company.

Analytix Trailblazer Inc.'s Web site is important for conducting business, because of its nature. It is special because it is primarily a self-service/support Web site; it is also an e-commerce Web site, because there are some services that customers can pay for online. The main objective of the Web site is to encourage their customers to use the self-service features so that there are fewer telephone calls to the service centre that are handled by Service Centre Consultants. This self service feature also has the aims of saving costs, while increasing customer satisfaction, improving online visitor conversion, increasing sales and improving customer retention.

Their Web site is designed to display five major areas, called the zones, namely

- Customer Zone
- Organisation Zone
- Online Visitor Zone
- Agent Zone and
- Supplier Zone

The Customers Zone is the trusted first point of contact for any wellbeing queries. This zone provides convenient servicing experience for customers. It also provides support and inspiration to encourage the wellbeing of customers. The Organisation Zone provides seamless servicing and tools for a healthier workforce.

The Online Visitors Zone captures the attention of prospective customers and educates them about products and services.

This zone supports rapid understanding of the visitor's proposition. It also facilitates an easy purchasing experience, while encouraging conversion of the visitor to a customer. The Agent Zone provides seamless servicing to brokers and intermediaries. This zone assists the agents to articulate the benefits of healthy living to clients. It also brings to life the link between a healthy lifestyle and the wellness programmes that the company encourages. It facilitates relationship-building between agents, online visitors and customers. It also provides tools for agents to articulate their customers' engagement with wellness programmes. The Supplier Zone also provides seamless servicing to suppliers of rewards programmes, while providing tools to help the suppliers articulate the benefits of wellness programmes.

The various zones of the Web site are maintained by the online team. There are eight people with specific roles, forming part of the Online Team. The team members are based in the United Kingdom and in South Africa. The organisation had adopted and implemented a Web Analytics solution before; however they were dissatisfied with the way the team had done it. There have been notable challenges with the first solution. The organisation was in the process of discontinuing the old Web Analytics solution so that they could adopt and implement another solution.

The selection of this single organisation, Analytix Trailblazer Incorporated, which has adopted and implemented Web Analytics for the study, was based on the following factors:

- Firstly, this organisation had employees a wide range of roles within their Web Analytics environment.
- Secondly, the organisation provided a good example of the adoption and the implementation of Web Analytics.
- Thirdly, the organisation was a matter of accessible.
- Fourthly, the organisation agreed to draw up a researcher's contract for grounded action research to be conducted within the organisation following the grounded action research norms. A senior representative of the organisation signed the contract.

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### 3.6 Methods

The choice of research method influences the way in which a researcher collects data. Specific research methods also imply different skills, assumptions and research practices. The four qualitative research methods that Myers (1997) discusses are action research, case study research, ethnography and grounded theory.

Some basic literature searches were conducted before the fieldwork started. In chapter two a mind map illustrates some initial themes pertaining to Web Analytics. Literature sensitivity was achieved by use of literature as a basis for professional knowledge and to which references were made (Strauss & Corbin, 1998; Kelle, 2005). The procedure followed to conduct grounded theory was that recommended by Corbin and Strauss (1990). Because they mention that there is flexibility within boundaries when it comes to grounded theory, analytical grounded theory approach was also used in this study.

The method used in this study entails merging some of the grounded theory techniques with the theory formulation steps used in action research. The grounded action research targets key stakeholders in the online team within the organisation. The researcher participated in the project to change one Web Analytics tool to another in this organisation. Grounded action research may be viewed as a distinct research method because of the way in which it links practical intervention and transformation of practise, such as Information systems development (Cecez-Kecmanovic, 2005). The research started with the mind map and the initial themes, as the concepts and theory were allowed to emerge from the data (Baskerville & Pries-Heje, 1999; Matavire & Brown, 2008); even though there were some prior thoughts pertaining to the subject area. These thoughts were gained from making some observations and conducting qualitative interviews in the organisation. Later an opportunity was offered to the researcher to participate in projects as a digital analyst in the online team. The researcher signed the grounded action research contract with the organisation, and the organisation signed an agreement to participate in the grounded action research study. Some analysis was conducted using the analytical grounded theory approach. It was then possible to give recommendations to the organisation, which were implemented.

### 3.6.1 Action research

Action research entails theory-building, getting involved, participating in order to examine the changes in the study topic, and analysing any developing changes of behaviour of the study topic (Baskerville, 1999). This procedure occurred for the first time in Kurt Lewin's work in the 1940s (Lewin, 1951; Baskerville, 1999). Action research connects theory and practice in an iterative process (Susman & Evered, 1979; Iversen *et al*, 2004). It represents a strategy for studying change in companies. It is significant in circumstances where action-taking and organisational processes are essential (Baskerville & Wood-Harper, 1996). Researchers do more than make observations during action research; they get involved and play a part while contributing to the study topic. In order to achieve scientific rigour, structure is compulsory in action research projects. The method requires the establishment of a research environment.

Then, five recognisable phases are iterated and illustrated, as in Figure 3.6.3 below:

- (1) diagnosis
- (2) action planning
- (3) action taking
- (4) evaluating
- (5) specifying learning (Susman & Evered, 1978; Baskerville & Pries-Heje, 1999)

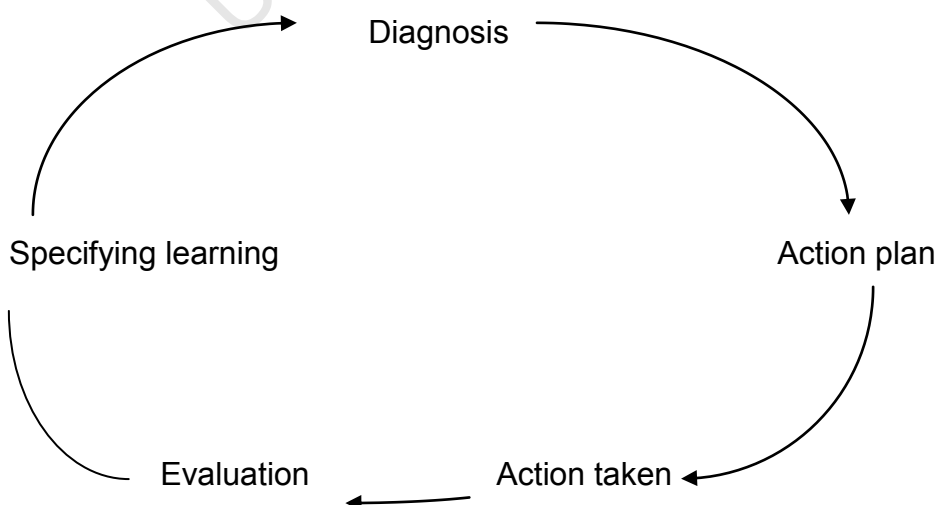


Figure 3.6.1 Action research cycle (Baskerville & Pries-Heje, 1999; Grant & Ngwenyama, 2003)

The key traits of Information systems (IS) action research include:

- Action research intends to bring about an increased understanding of the research problem, highlighting the difficult and multivariate nature of the research environment in the IS domain.
- Action research helps in practical problem solving and, at the same time, in problem-solving scientific knowledge. This objective divides into two vital process traits. Not only are, there extremely interpretive assumptions being made about the observations, but at the same time the researcher is intervening in the problem-setting.
- Action research is performed jointly with and improves proficiencies of, the online team. A process of participatory observation is implied by this objective. Improved proficiencies (an unavoidable outcome of joint efforts) are judged relative to the researcher's previous proficiencies and to those of the online team. The degree, to which this is a goal, and the balance which exists between participants, will depend upon the research environment.
- Action research is applied primarily to gain understanding of change processes in social systems (Baskerville, 1999).
- Action research has a cyclical nature (iterative).

Action research should be differentiated from consulting, because it is different from consulting in various ways, namely:

- Motivation. Action research is motivated by its scientific prospects. Consulting is stimulated by trade profits.
- Commitment. Action research makes a commitment to the research community by adding value to the body of knowledge, as well as to the client. In a consulting environment, the obligation is to the client.
- Approach. Joint efforts are fundamental in action research because of its idiographic assumptions. Consulting appreciates its unbiased opinion, offering an objective point of view on company challenges.
- Foundation for recommendations. In action research, this foundation is a theoretical framework. Consultants are supposed to offer resolutions that did well in previous circumstances.

- Essence of the organisational understanding. In action research, organisational understanding is based on practical success from iterative experimental changes in the organisation. Consultation teams develop an understanding through their independent critical analysis (Baskerville, 1999).

Limitations of action research, amongst others, include drawing upon existing theory as a foundation upon which to plan and intervene (Baskerville & Pries-Heje, 1999). The role of theory is a key aspect. Following the evaluation of outcomes of each cycle, the theoretical framework may be reinforced, withdrawn or modified to reflect realities of action-taking. Despite the importance of theory-evolution to the scientific rigour of action research, little attention has been devoted to the exact processes by which such theories are pursued during action research (Baskerville & Pries-Heje, 1999). There are ways to deal with the limitations of action research. Techniques, such as those used in grounded theory, allow theory to emerge naturally in an unpredictable research environment (Baskerville & Pries-Heje, 1999). The intention is to create a blend with exact information that gives people in the research environment ability to participate and general knowledge that is helpful in similar situations (Iversen *et al*, 2004).

### 3.6.2 Grounded theory

Grounded theory is an inductive theory derived and developed from data, methodically gathered and analysed through the research process (Martin & Turner, 1986; Strauss & Corbin, 1998). Strauss and Corbin (1998) further explain that a researcher does not start a project with a preconceived theory in mind (unless the purpose is to elaborate and extend an existing theory); rather, the researcher begins with an area of study and allows the theory to emerge from the data.

There are two approaches to grounded theory that have emerged since its inception. There may be uncertainty regarding differences that now exist between approaches of Glaser and Strauss, who together first described the method (Heath & Cowley, 2003). Glaser and Strauss both acknowledge that the researcher will not enter the field without thoughts about the subject, however the researcher is open-minded about appreciating new connotations (Heath & Cowley, 2003).

For Glaser, learning not to know is essential to maintaining sensitivity to data. For Strauss both use of self and literature are early influences and, while distributed understandings from past experience and literature may be used to inspire theoretical sensitivity and generate hypotheses, learning not to know is not essential (Heath & Cowley, 2003).

Emergence retains a place in Straussian grounded theory which also indicates that ideas or hypotheses generated will be dropped if their importance fails to materialise in the data; however for Glaser, it is data that develops theoretical sensitivity (Heath & Cowley, 2003). Glaser criticises asking a lot of questions and making suppositions about what might be rather than what exists in the data, while Strauss maintains that the function of induction should not be over-emphasised (Heath & Cowley, 2003). Straussian grounded theory approach has been applied in the study, because the researcher and the literature have been early influences in the study.

Matavire and Brown (2008) suggest four different grounded theory approaches. According to Kelle (2005), one important point of divergence between the originators of grounded theory methodology is the use, by Strauss and Corbin (1998), of the paradigm model in the discovery of theory. Strauss and Corbin (1998) state that if the researcher does not use the model the “grounded theory analysis will lack density and precision”. Glaser (Heath & Cowley, 2003) asserts that this notion produces a forced, pre-conceived, full ‘conceptual description’, rather than grounded theory that emerges from data. Thus, the central bone of contention is that the principle of emergence is violated by some of Strauss & Corbin’s (1998) suggestions. According to Glaser (Heath & Cowley, 2003) these paradigm model codes form part of a wider family of codes to which no prescription to any research setting should be advocated. The rigid use of the paradigm model promotes deductive as compared to inductive research – what Glaser (Heath & Cowley, 2003) refers to as forced rather than emergent theory. Strauss & Corbin (1998), on the other hand, contend that the purpose of a paradigm model is to gain a better understanding of how a phenomenon relates to sub-categories.

Coding represents “the analytic processes through which data are fractured, conceptualised, and integrated to form theories” (Strauss & Corbin, 1998). In a study conducted by Matavire and Brown (2008), it was found that in articles following the Glaserian grounded theory methodology, no prior theorising was evident, in accordance with the principle of emergence. For research articles that claimed to be following the Straussian grounded theory methodology, however, 11% entered the research with a priori theory. For researchers who used only grounded theory analysis techniques, 64% indicated prior theorising occurred. These studies are not bound to be inductive or emergent, and therefore correctly articulated their grounded theory approach. Figure 3.6 illustrate the four grounded theory approaches and their differences.

| Approach   | Principles                           | Coding                 | A priori Theory | Paradigm model            | Typical References                     |
|------------|--------------------------------------|------------------------|-----------------|---------------------------|--|
| Glaserian  | Required                             | Open, Selective        | No              | Viewed as family of codes | Glaser & Strauss (1967); Glaser (1992) |
| Straussian | Required (Glaser disputed adherence) | Open, Axial, Selective | No              | Greater emphasis          | Strauss & Corbin (1990, 1998)          |
| Analytical | Not necessarily                      | Any or all used        | Maybe used      | Sometimes used            | Matavire & Brown (2008); Variety       |
| Mixed      | Not necessarily                      | Any or all used        | Maybe used      | Sometimes used            | Mingers (2001)                         |

Figure 3.6.2 Four Grounded Theory Approaches (Matavire & Brown, 2008)

Four limitations of grounded theory (Thomas & James, 2007) were identified by Layder in 1993. First, Layder says, grounded theory highlights the immediately obvious and detectable at the expense of investigating the interweaving of structural features of social situations with what is happening in the research environment. Second, he says the focus on the ‘here and now of everyday encounters’ limits the concept of power that is possible in the approach. Third, he says that the development of theory in a grounded theory should be guided by data than rather be stifled by it. Finally, he recommends that the results produced by grounded theory should be recognisable to the people studied.



This places limitations on analysis because it rules out features and interpretations which they could not have been expected to have considered (Thomas & James, 2007). Some of these limitations are addressed by using the Straussian approach to grounded theory, which allows literature sensitivity (Strauss & Corbin, 1998; Kelle, 2005). These limitations are also addressed by combining grounded theory with action research and not using grounded theory in isolation. The combination is called grounded action research and the motivation of selecting it follows in the next section.

### **3.6.3 Grounded action research selected for the study over other methods**

Grounded action research is a method for advancing and refining the practice of the action research method (Baskerville & Pries-Heje, 1999). This method seems to be an ideal approach for studying change in companies. It is an integration of grounded theory and action research. The integration entails merging certain grounded theory activities in phases of action research in two ways. Firstly, grounded theory notation, such as memos and diagrams, is used to symbolise theory-data during the action research cycle. Secondly, grounded theory coding becomes the essence of the evaluating, learning and diagnosis phases of action research. The observations regarding these phases must be captured for open coding.

The greatest advantage grounded action research has, over other methods is the opportunity that the researcher has to be part of the research setting, which allows continuous access to the actors, whose trust can be gained, and this permits observations to be taken iteratively. Grounded action research allowed the researcher to engage in the research environment and experience and document direct challenges that came from adoption and implementation of Web Analytics. No other research method would allow this sort of experience. Being part of the team in the organisation gave me an opportunity to build trust with the Web Analytics stakeholders and an opportunity to communicate iteratively whether formally or informally.

In other research methods, a researcher may be perceived as an 'outsider' and therefore other research participants may not be willing to liberally share their opinions and the chances for multiple interviews may be limited. The combination of grounded theory and action research, especially the strengths of the two methods combined, help to minimise the limitations that each of the methods have, as discussed above.

The research questions in chapter one, which are discussed below, entail aspects of organisational change, and grounded action research is ideal for studying organisational change. Both Web Analytics industry experience and Web Analytics research experience was brought to the organisation (See Appendix E for the researcher's Web Analytics industry experience). The researcher has been actively reading and writing Web Analytics peer-reviewed research papers and industry publications, and has been an active member of Web Analytics Association (WAA) since 2005. An Introduction to Web Analytics Online Course was completed through the University of British Columbia (UBC) and passed with 98%.

#### **3.6.4 Data collection**

Qualitative data sources include observation and participatory observation (fieldwork), interviews and questionnaires, documents and texts, as well as impressions and reactions (Myers, 1997). Qualitative data are in the form of text, written words, phrases, or symbols describing or representing people, actions, and events in social life (Myers, 1997; Neuman, 2000).

As in other qualitative approaches, data for a grounded action research can come from various sources (Corbin & Strauss, 1990). Grounded theory researchers collect and analyse simultaneously from the initial phases of the research (Holstein & Gubrium, 2003). Data were collected from primary and secondary sources. Seven interviews were conducted across two organisations and every interviewee was interviewed once. There were opportunities to ask interviewees more questions informally in meetings and whenever time permitted within the organisation, because the researcher was part of the team. There were five cycles of analysis for refining the proposed Web Analytics adoption and implementation model. Subsequently five Business Owners/Web Experts were interviewed.

#### 3.6.4.1 Background to data collection in the first case organization

Analytix Trailblazer Incorporated had a positive attitude towards Web Analytics adoption and implementation. There was an overall Digital vision that existed for the above-mentioned Web site zones. Web Analytics research had been done randomly by some members of the Online Team. Some team members were willing to learn more about Web Analytics over and above their job specifications and performance scorecards. The Head of the Online Team had substantial industry experience of Web Analytics of more than five years from his previous role. He also had external business relationships with Web Analytic vendors and organisations offering various Web Analytics tools.

The team in this study is a virtual team with team members in South Africa and in the United Kingdom, as has been previously mentioned. The organisation in the study is UK-based, however their holding company is in South Africa. Respondent AA2 who is based in the UK confirmed the difficulty of recruiting a Web Analyst or a Digital Analyst in the UK to be based in the UK or in SA. The organisation opted for managing their Web Analytics in South Africa.

A virtual team consists of members of a collective spread geographically while working together towards a common objective or objectives in a project (Bjørn & Ngwenyama, 2009). It is evident from the analysis that the project setting consisted of a virtual team. A virtual team faces a cyclical problem of dealing with working together from various locations (Bjørn & Ngwenyama, 2009). In virtual teams, members may not meet face-to-face (Jarvenpaa *et al.*, 1998), or they may meet face-to-face once in a while (Chudoba *et al.*, 2005). In this instance the virtual team meets a few times in a year face-to-face, not necessarily at the same time, however randomly.

There were seven online team members. The researcher then became the eighth member of the online team in this study. Two of the online team members were developers who have been recently hired as temporary staff members. There were four other Web Analytics stakeholders from the customer marketing team.

One out of the four members resigned before a qualitative interview was conducted with her. Working with the researcher, the business unit formed a team. The team consisted of Head of Online based in the UK and frequently visiting SA, Online Manager based in the UK and periodically visiting SA, Senior Web Designer based in the UK and periodically visiting SA, Online Acquisition Manager who was based in the UK, Business/Change Analyst based in SA, and the action researcher who was a Digital Analyst based in SA. The three Web Analytics stakeholders were two Customer Marketing Managers who were based in the UK and Head of Marketing who was based in the UK. Later the team increased to include two temporary Developers in SA.

Member AA1, Member AA2, Member AA3, Member AA4, Member AA6, Member AA11, Member AA12 and the researcher formed the online team. Other Web Analytics stakeholders included Member AA5, Member AA7, Member AA8, Member AA9 and Member AA10. There were seven structured interviews conducted. The interviews were initially conducted for an hour. The first interviewee, which is the Online Manager from the UK, complained that the interview was too long. The interviews after that were reduced to 45 minutes per interview. An extra 15 minutes was available to the interviewees who had extra time. The researcher spent twelve months at Analytix Trailblazer Inc., from March 2009 to February 2010. The nature of data collected was both retrospective and ongoing. The researcher was able to gain sufficient access and spend enough time to develop an understanding of the setting and the Web Analytics practice within Analytix Trailblazer Inc., and collected data during the course of the events (on-going) and retrograde.

The first interview was conducted with the Online Manager who was based in the UK. She was visiting South Africa, so there was a face-to-face interview conducted at the organisation's offices. The Online Manager's role included ensuring that the organisation's digital strategy is implemented successfully on most online projects. The Online Manager had to ensure that Web Analytics tools are implemented appropriately. The Online Manager reported to the Head of Online. The second face-to-face interview was conducted with the Head of Online. The Head of Online formulated the digital strategy for the team and managed members of the online team. The Head of Online made final decisions regarding on online project proposals. The Head of Online managed the budget of the online team.

The Head of Online was responsible for Web Analytics' return on investment (ROI). The Head of Online has Web Analytics experience. He has worked with commercial Web Analytics packages in his previous roles. He has more than four years of Web Analytics experience and more than fourteen years of digital media experience.

The third face-to-face interview was conducted with the Senior Web designer who was based in the UK when he visited the South African offices. The Senior Web Designer was responsible for updating the Web site, and using the Web Analytics reports to improve the Web usability. He also designs and develops Web pages for multivariate testing. He understands and is knowledgeable about social media for the corporate Web site.

The fourth face-to-face interview was with the Business/Change Analyst. The Business/Change Analyst is involved in change in the business environment as well as the implementation and deployment of solutions. Amongst other roles, he did the bi-weekly Web Analytics reporting. The Business/Change Analyst was a self-taught Web Analytics practitioner. The Business/Change Analyst owns a Web services business. Their services include online sales optimisation, Web design, Web development, Web site and e-commerce hosting. The Business/Change Analyst advised the Head of Online about all the different Web Analytics packages on the market. Member A4 also had to determine which reports would be set up and/or scheduled in the Web Analytics software.

The Customer Marketing Manager was interviewed fifth, telephonically. The Customer Marketing Manager measures the success of the campaigns. The Customer Marketing Manager and the marketing team also use the Web Analytics reports to make decision on how to improve their marketing strategy. The sixth interview with the Online Acquisition Manager was telephonic. The role of the Online Acquisition Manager is to generate sales (online and offline, especially online) for the (Online) Marketing Manager. Member A6 requires accurate data and analysed insights from the Web Analytics reports so that he can make well-informed decisions that will increase sales. The Head of Marketing was interviewed by telephone, and was the seventh interviewee. The Head of Marketing required Web Analytics reports for making informed decision regarding marketing initiatives.

The Head of Marketing did not have a Web Analytics background. The online team Interns were not involved in Web Analytics initially, however one of them ended up assisting the Business/Change Analyst in placing the Java script code (tagging) on the new pages and/or new campaigns. There was hardly an opportunity to interview either the Customer Marketing Manager or the (Online) Marketing Manager due to their busy schedules. The Marketing Director resigned before an interview with her could be arranged. The interviews were not repeated; however being part of the team, the researcher had access to the Web Analytics stakeholders for the duration of her Digital Analyst contract.

Other data sources, other than the interviews covered publications including the organisation's Web sites, business articles, minutes from meetings, observations made, Web Analytics online courses (specifically University of British Columbia's Introduction to Web Analytics and Google Analytics' Conversion University), and Web Analytics sessions with external consultants. Secondary data provided an essential preparation for interviews and confirmation of some of data gathered during and after interviews. Secondary data helped to cross-check formal information, learn about major events, technical details, organisational structure, responsibilities and roles.

| Respondents | Role in the organisation        | Type of interview / Comments  |
|-------------|---------------------------------|---|
| Member AA1  | Online Manager (UK)             | face-to-face interview  |
| Member AA2  | Head of Online (UK)             | face-to-face interview  |
| Member AA3  | Senior Web Designer (UK)        | face-to-face interview  |
| Member AA4  | Business / Change Analyst (SA)  | face-to-face interview  |
| Member AA5  | Customer Marketing Manager (UK) | telephonic interview  |
| Member AA6  | Online Acquisition Manager (UK) | telephonic interview  |
| Member AA7  | Head of Marketing (UK)          | telephonic interview  |
| Member AA8  | Marketing Director (UK)         | resigned before an interview was conducted  |
| Member AA9  | (Online) Marketing Manager (UK) | schedule too busy for an interview (rescheduled interview appointments three times) |
| Member AA10 | Customer Marketing Manager (UK) | schedule too busy for an interview (rescheduled interview appointments twice)       |
| Member AA11 | Online Team Intern (SA)         | an interview was not conducted  |
| Member AA12 | Online Team Intern (SA)         | an interview was not conducted  |

Table 3.6.4.1 Web Analytics Stakeholders in the first organisation

Respondent AA2 said that as much as Web Analytics is broadly used, organisations in the UK do not use the Management Information (MI) that they have got. Respondent AA1 who is also based in the UK said that Web Analytics is widely accepted in the UK and organisations can hardly do business without adopting and implementing it. Respondent AA4 who is based in SA and Respondent AA5 who is based in the UK concurred with Respondent AA1 that Web Analytics is more mainstream in the UK and the majority of the organisations are using it. Respondent AA3 and Respondent AA7 who are based in the UK did not know the general Web Analytics practice in the UK. The former admitted lack of knowledge in that regard and the latter said that she was not informed enough to give a response to that particular question. Respondent AA6 who is based in the UK said that he has not seen many other Web Analytics vendors in the UK other than WebTrends and Google Analytics.

There are a number of projects that this virtual team work together on to ultimately improve the digital strategy of the organisation. Each geographic section of the online team meets weekly in its geographical location. The online team also meets altogether every Tuesday without the other Web Analytics stakeholders. The meetings are normally facilitated by video conferencing. E-mail, Skype, facsimile, postal and telephonic communications are always at this virtual team's disposal. The other Web Analytics stakeholders interact with the online team regularly when requesting certain changes on the Web site. These Web Analytics stakeholders also request impact analyses and reports to measure their campaigns and marketing efforts. Based on the nature of the project, there are occasionally meetings which include a majority of the Web Analytics stakeholders.

The research environment is a primary medical insurance (PMI) organisation. Analytix Trailblazer Inc. decided to embark on a project to decommission their previous Web Analytics tool, so that they could adopt and implement a new one. They felt that the adoption and implementation practice that they followed, which included trial and error, proved to be expensive and not easy to use. They also encountered a lot of challenges, which included lost data and the uncertainty of tagging techniques by the Web Analytics vendor's client.

The Web Analytics practice at the beginning of the project, at Trailblazer Analytix Inc. was ad hoc and an afterthought. The Head of Online said that they managed that by adding a Digital Analyst who will be the owner of the Web Analytics Solution and Management Information. This challenge led to the realisation that Analytix Trailblazer Inc. felt that there was an expertise gap in their team with regard to Web Analytics adoption and implementation. There was no analysis nor insights reported on the weekly report. The team members who created the report felt that this was an additional task out of scope in their responsibilities. They also felt that different team members had pockets of information and that there was no single owner of Web Analytics and online Management Information (MI). While the organisation was trying to deal with that, the previous Web Analytics tool simply quadrupled the figures one morning without any campaigns or any other marketing actions done. The Web analytics tool was generating inaccurate data and when the support team from the Web Analytics vendor was contacted, numerous times by different analysts, they could not assist. The vendor support team tried possible solutions; however they did not resolve the problem. The account manager from the vendor did not want to be part of the resolution. The problem persisted to a point where the vendor was persuading the client to upgrade the Web Analytics software so that they could 'inspect' the problem even further. The organisation in this study felt that there was no value in inaccurate data. We then set up a free Web Analytics tool to verify the data, and indeed the statistics were vastly different.

Analytix Trailblazer Incorporated approached Web Analytics in an ad-hoc manner. There was no Web Analytics strategy documented within the organisation. The Digital vision that exists was not clearly communicated with any of the Web Analytics stakeholders. Some stakeholders were not even aware of the Digital vision and how it impacted their work. Specific Web site goals for each of the Web zones were not clearly defined or documented. There was no dedicated Digital Analyst who was responsible for their own Web Analytics strategy and implementation. Various online team members carried out a number of Web Analytics related tasks over and above their roles. Some online team members taught themselves Web Analytics related tasks while testing the tasks that had been implemented.



Many organisations were approached, but research access was not easy to obtain. There were many meetings, phone calls, e-mails for negotiating entry into Analytix Trailblazer Inc. Even after receiving permission to conduct the study, negotiations continued to find the best and most suitable ways to conduct the research. Therefore it was vital to maintain amicable relationships.

#### 3.6.4.2 Background to data collection in the second case organization

Another case study was conducted in another setting. A pseudo name is given to the second research environment; it will be called *Web Analytics Masters (WAM)*. Web Analytics Masters (WAM) is a large organisation based in South Africa in the financial services sector. The second case organisation had already adopted and implemented Web Analytics successfully. There were two teams in the organisation that contained Web Analytics resources/stakeholders, namely: a digital marketing team and an online team. The digital marketing team had three Web Analytics stakeholders and the online team had one Web Analytics resource. Both the digital marketing team and the online team had an acceptable level of experience regarding Web Analytics.

Each interviewee had a minimum of five years of Web Analytics experience. Four informal face-to-face interviews were conducted, once each person, at the second case organisation, and analysed using grounded theory.

The first informal interview was conducted with a senior business analyst. His role pertaining Web Analytics was to manage the Web Analytics package for the master profile of the Web site. The senior business analyst added administrators and report viewers on the Web Analytics package profiles that he was responsible for. He compiled monthly reports with quantitative metrics including the interpretations of the Web Analytics data. He also produced seasonal reports that included qualitative metrics including business insights from the data. The second interview was conducted with the head of digital marketing. His role regarding Web Analytics, among other important responsibilities, included giving a strategic vision to the team regarding the digital strategy which included Web Analytics.

His role was to manage knowledge management within the team, because some of the Web Analytics resources were already experts contributing to international digital publications and blogs. The head of digital marketing encourages innovation in his team. He found ways of continually working smarter to save costs. He also ensured that he built internal and external relationships that would benefit and add value to the digital strategy of the organisation. The third informal interview was conducted with the developer of the online team. His role pertaining to Web Analytics was to manage the Web Analytics package for the online section profile of the Web site. The developer added administrators and report viewers on the Web Analytics package profiles that he was responsible for. The fourth informal interview was conducted with the developer of the digital marketing team. His role was to add tags to Web site pages that had to be tracked. He also ensured that various systems that were required for Management Information reports worked well together.

| Respondents | Role in the organisation                      | Type of interview / Comments   |
|-------------|---|--------------------------------|
| Member BB1  | Senior Business Analyst (Digital Marketing)   | face-to-face interview         |
| Member BB2  | Head of Digital Marketing (Digital Marketing) | face-to-face interview         |
| Member BB3  | Developer (Online Team)                       | face-to-face interview         |
| Member BB4  | Lead Developer (Digital Marketing)            | face-to-face interview         |
| Member BB5  | Copywriter (Digital Marketing)                | an interview was not conducted |

Table 3.6.4.2 Web Analytics Stakeholders in the second case organisation

### 3.6.4.3 Background of business owners and Web Analytics experts

Business owners who are knowledgeable about Web Analytics were consulted to review the proposed model together with the twelve guidelines and then give feedback. Web Analytics experts were also requested to offer a critique of the proposed model together with the twelve guidelines and then offer advice. This was done in a form of face-to-face interviews. There were guiding questions that were used during the interview and they are in Appendix G. Business owners and Web Analytics experts were given time during the interview to go through the model and the guidelines. The table below illustrates participants of member checking and those who agreed to participate.

| Respondents                             | Role in the organisation  | Type of interview / Comments                          |
|---|---|---|
| Business Owner: BO1                     | Founder and Owner – usability and digital strategy company                                | face-to-face interview                                |
| Business Owner: BO2                     | Founder and Owner – digital marketing consultancy specialising in Search Engine Marketing | face-to-face interview                                |
| Business Owner: BO3                     | Founder and Director – Web and online solutions   | an interview was not conducted, e-mail correspondence |
| Web Analytics Expert: WAE <sub>x1</sub> | Digital Media Analyst (Digital Marketing)   | face-to-face interview                                |
| Web Analytics Expert: WAE <sub>x2</sub> | Senior Programmer (Digital Marketing)   | face-to-face interview                                |
| Web Analytics Expert: WAE <sub>x3</sub> | Senior Graphic Designer (Digital Marketing)   | face-to-face interview                                |
| Web Analytics Expert: WAE <sub>x4</sub> | Developer (Online Team)   | an interview was not conducted                        |

Table 3.6.4.3 Web Analytics experts and business owners

Business owner, BO1, is the owner of a usability and digital strategy company. His company provides consulting services to advertising agencies, and further delivers digital solutions to clients in the tourism and wine industries – predominantly in the South African and European markets. BO1 is a passionate usability and experience design advocate and maintains a keen interest in digital developments within emerging markets.

BO1 is a digital strategist and usability specialist, and has spent the past sixteen years launching several start-up ventures and managing digital businesses within multinational corporations. During this time he has provided web and mobile solutions to a diverse mix of brands across several industries. He has experience in being the head of digital at one of the large financial services providers in South Africa, and was previously a director and the executive producer at a digital media agency. He has been responsible for the interface design and development of a pioneering mutual fund supermarket, and the design and management of online business. His current focus is on developing and directing external digital strategy and businesses.

Business owner, BO2, is the owner of digital marketing consultancy. His company is a leading integrated digital marketing consultancy specialising in Search Engine Marketing (SEM). They focus on delivering a maximum return on investment for clients through a range of digital marketing services including, Paid Search, Search Engine Optimisation (SEO), Display, analytics, mobile search and display, social media, affiliate, and training and consultancy. BO2 was trained in Online Marketing. He then became a Web Developer and Analytics was crucial for Web development. The only way to track was through Analytics before developers used content management systems (CMS). He started in 2000. BO2 started his online career at an online travel agency and then moved to Google United Kingdom. He worked in the United Kingdom and European markets in the local Google vertical and so has worked on clients in the UK. His extensive five years Google experience plus the local African knowledge he gained by setting up the Google South African office gives his company a great competitive advantage. BO2 runs his company offices in Cape Town which is the outsource hub for his company's UK clients. When he is not online you will find him at his favourite local surf spot.

Business owner, BO3, is the owner of a company that offers Web and online solutions in Gauteng, South Africa. He is an online consultant and innovator, enjoys solving business problems that can help businesses succeed in the digital space.

Web Analytics expert, WAEx1, is a Digital Media Analyst based in Cape Town, South Africa. He has many years experience in mainstream and digital media and has worked extensively in television, design and on the Internet. Some of his qualifications include a BSc degree, a diploma in Information Systems Project Management and Microsoft Certified Professional status. He has also completed studies in the areas of Business Analysis, Financial Markets and Knowledge Management. He has successfully completed the Google Analytics Intelligence Quotient (IQ) Online Course. During his ten years in television he worked on a wide array of projects including documentaries, television (TV) series and material for BBC, CNN, Dutch Television and other European Networks. Among his local clients were several of South Africa's larger agencies and corporations. Since 2000, WAEx1 has been immersed in several online initiatives, mostly in financial services and has worked in the areas of project and development management, solutions design, business analysis and online strategy.

He spent four years developing and managing a specialist online platform for one of South Africa's largest financial services provider, high net worth client and broker offering. More recently, the focus of his work has been in search, reputation management and analytics.

Web Analytics expert, WAE<sub>x2</sub>, is a senior programmer for one of South Africa's largest financial services provider. He has more than ten years of industry experience and 'on the job' training in Web development. He has successfully passed the Google Analytics Intelligence Quotient (IQ) Online Course. He has been involved in Web Analytics since 2003. Web Analytics expert, WAE<sub>x3</sub>, is a senior graphic designer for one of South Africa's largest financial services provider. He has a Bachelors of Arts and Marketing. He studied in Holland in one of the best arts university there. He probably started Web Analytics when he was introduced to it. He reckons that was 2005. He does not have any official training of Web Analytics. He has a good understanding of Web Analytics. His Web Analytics background is self-trained. Web Analytics expert, WAE<sub>x4</sub>, is a developer on a specialist online platform for one of South Africa's largest financial services provider, high net worth client and broker offering. He said that he has three years of Google Analytics experience, and he said that he has about five to six years experience of Web Analytics in general. In the following section, primary data sources and secondary data sources are discussed.

#### 3.6.4.4 Primary data sources

In order to study Web Analytics practices, an organisation that has adopted and implemented Web Analytics was approached so that observations could be made of what was done. Later there was an opportunity to be part of the online team. Initially observations were made of the conditions under which Web Analytics occurs, the actions employees take, the consequences of those actions and other behavioural patterns in the respondents' own environment. Similarities and differences were looked for and compared. Finding patterns assisted in giving order to the data.

The primary data sources consist of relevant information that the researcher gathered personally. These sources include observations and qualitative interviews which were conducted in the first organisation, the second organisation and then a group of Industry experts and business owners. Qualitative interviewing fits grounded theory particularly well (Holstein & Gubrium, 2003). Qualitative interviews afford opportunities to observe individuals and groups in action and to learn facts, opinions, and beliefs, in the real world where Web Analytics role players operate. These interviews (see Appendix B) were conducted and provided a tool to investigate Web Analytics from a wide range of aspects. These interviews revealed information about the problems, the practices and the people involved in Web Analytics in the organisation, and permitted the gathering of viewpoints from various team members. Data collection and its immediate analysis enabled the research process to capture the relevant points of the subject as soon as they were perceived. Myers and Newman (2007) list seven guiding principles for conducting qualitative interviews in IS research. The qualitative interviews in this study were conducted using these seven guidelines, because the guidelines meet some of the evaluative criteria.

The guiding principles according to Myers and Newman (2007) are:

1. positioning the researcher
2. minimising social discord
3. embodying various points of view
4. dealing with interpretation from various sources
5. using techniques that reveal answers from the interviewee
6. flexibility
7. confidentiality of disclosures

Myers and Newman's (2007) guiding principles can be explained in more detail as follows:

#### (1) Positioning the researcher

This guideline suggests that the researcher, being the interviewer should position themselves in the research environment before the qualitative interview takes place. Even though the interviewee was in his/her context, it was important for him/her to position him/herself. For the purposes of the writing-up phase, what usually assists in this situation is understanding who each person is and what his/her role is in the project setting. There may be other basic questions, such as demographics that may need to be asked.

## (2) Minimising social discord

This guideline suggests that the interviewer should create an environment that is calm for the interviewee. It is important to disclose the purpose of the interview, and the options and rights that the interviewee has at each step of the interview. This includes managing the consciousness of the interviewee by wearing suitable clothes for the interview, by using simple language and using understandable verbal communication.

It is important to be mindful of who is being interviewed and the role that that person has in the organisation. Each interviewee should be personalised and treated as an individual, based on his/her role. Demographics and culture may be important depending on the topic area of interest.

## (3) Embodying various points of view

This guideline encourages interviewing various kinds of people in the organisation. It is important to include various points of view from different levels of the organisational structure, and even more so in a study guided by qualitative research. Triangulation of the interviewees may be achieved by including diverse interviewees with diverse roles, where opinions are not coming from the same level of the organisational structure. Interviewees are different and one should avoid privileged partiality when interviewing.

## (4) Dealing with interpretation from various sources

Each interviewee views and reports on the research environment in their own way. It is just the same case of the researcher. It is important to make sure that the topic area of interest is relevant to the context of the interviewee. So, the points of view of interviewees are reported on because they form part of the research environment. Being interviewed in their work context is an infrequent occurrence for people involved in Web Analytics. Therefore, it is important after reading the interview transcripts, to use other data sources to understand the in-depth meaning of the interview responses.

#### (5) Using techniques that reveal answers from the interviewee

This guideline encourages taking phrases and expressions from the interviewee's responses to create comments or even subsequent questions to promote using the respondent's language from his/her point of view. It is not advisable to stick to the prepared script, particularly if the jargon is not the same as the respondent's language. It is important for the respondent to use his/her expression to describe and explore his/her context. The recommendation is to focus on precise and particular matters rather than on matters in general. The role of an interviewer entails listening, prompting, supporting and managing the communication.

#### (6) Flexibility

This guideline recognises that the interviewer should be mindful of respondents' differing moods (such as: is he/she tired, does not want to answer a question, does not know, is hesitant, is in a hurry, is relaxed, is uptight, is boastful, gives inaccurate information) at different times and that it is important to react appropriately.

Semi-structured and unstructured interviews require flexibility, open-mindedness and creativity on the part of the interviewer to deal with and make the most of unexpected changes in the direction.

#### (7) Privacy of disclosures

It is vital to keep transcripts, Dictaphone tapes and any other technology used to capture the interview responses safe and not disclose them, in accordance with the confidentiality and disclosures agreement signed with the organisation. Any member checking that is required should be conducted in good time at the organisation, and therefore the organisation should be given research reports as soon as they become available.

More interviews and more analysis were conducted in stages. More observations were conducted. The researcher participated and intervened in Web Analytics practice. As part of the online team, it was possible for the researcher to conduct periodic analysis, offered recommendations and implemented approved recommendations, thereby adding value to the organisation.



#### 3.6.4.5 Secondary data sources

As mentioned above, the secondary data sources were comprised of relevant information that was not collected first-hand. These data sources were not only publications but included the organisation's Web sites, business articles, minutes from meetings, Web Analytics online courses (specifically University of British Columbia's Introduction to Web Analytics and Google Analytics' Conversion University), and Web Analytics sessions with external consultants.

Secondary data provided an essential preparation for interviews and confirmation of some of data gathered during and after interviews. Secondary data helped to cross-check formal information, learn about major events, technical details, organisational structure, responsibilities and roles.

#### 3.6.5 Data Analysis

Analysis is the interplay between researchers and data (Strauss & Corbin, 1998). Qualitative modes of analysis (Myers, 1997) are concerned primarily with textual analysis (whether verbal or written). In the study, interviews, valid references from Web sites which have adopted and implemented Web Analytics and the literature were inspected. Qualitative research does not have a wide range of clear, agreed upon processes and procedures for data analysis (Ritchie & Lewis, 2004; Myers & Newman, 2007). Some of qualitative methods have flexible strategies within defined boundaries.

Grounded theory methods consist of flexible strategies for focusing and expediting qualitative data collection and analysis (Holstein & Gubrium, 2003). These methods provide a set of inductive steps that successively lead the researcher from studying concrete realities to rendering a conceptual understanding of them (Holstein & Gubrium, 2003). Grounded theory may be used as a mode of analysis in research as well.

Matavire and Brown (2008) claim that strict adherence to all of the grounded theory analysis is not necessary. They give an example, for instance, researchers may start with pre-conceived *a priori* theory, then go on to collect empirical data, and finally analyse it using grounded theory coding techniques. The intent may be to extend the initial theory inductively. Alternatively, the intent may be to use the initial theoretical framework solely as a guide or sensitising device, before applying grounded theory techniques to analyse data and build a theory (Matavire & Brown, 2008). The final theory developed may or may not resemble the initial framework (Matavire & Brown, 2008). Grounded theory for analysis was used to analyse the collected data in this study. Analysis from the beginning is a major source of effectiveness of the grounded theory approach. Grounded theory is performed with an open mind without preconceived ideas and one which grounds theory in reality (Glaser & Strauss, 1967) in contrast to the ideas of Matavire and Brown (2008) in the previous paragraph. The concepts that are mentioned repeatedly in primary and secondary sources of data will be recognised for theory building. Concepts are drawn from the initial text. Categories are then developed. These categories emerge from the reflections documented in the memo's, written after each interview. There is an iterative process to redefine categories.

A memo, which is a unit or sub-category for the research, can be a sentence, a paragraph or a few pages that exhausts analyst's ideas, raises data to a conceptual level, develops properties of each category, presents hypotheses about connections between categories and begins to locate emerging theories (Duchscher & Morgan, 2004). A theoretical memo will continue to be written at the end of each interview and memo-ing will continue until the end of the study. The search for negative and qualifying evidence is part of the verification procedure during analysis (Corbin & Strauss, 1990; Kelle, 2005; Thomas & James, 2005). The concepts and their relationships will be tested with colleagues who have experience in research and Web Analytics. Broader conditions which include economic conditions, cultural values, political trends, social movements (Corbin & Strauss, 1990) will be included in the analysis. Specific linkages will be sought and shown between conditions, actions and consequences. Code note-writing is an integral part of analysis. Theoretical memo and code note-writing procedures are specific to grounded theory (Corbin & Strauss, 1990).

Theoretical saturation is the point at which incremental learning is minimal because the researcher is observing aspects of Web Analytics that have been seen before (Glaser & Strauss, 1967). The iterative procedures will come to an end when theoretical saturation is reached. There is a limit to the number of further interviews that can be conducted, because the online team has eight members, even though there are Web Analytics stakeholders in other teams.

Coding represents “the analytic processes through which data are fractured, conceptualised, and integrated to form theories” (Strauss & Corbin, 1998). Glaser (1992) makes mention of open coding and selective coding, while Strauss and Corbin (1998; 1990) suggest using three types of coding activities – open, axial and selective in sequence. Although presented as sequential processes, they are in practice performed iteratively, where the researcher moves between stages as demanded by the investigation. These three types of coding are described below.

#### 3.6.5.1 Open Coding

Open coding is “the analytic process through which concepts and categories are identified and their properties and dimensions are discovered in data” (Strauss & Corbin, 1998). Concepts are the basic building blocks of theory, and so the first task in developing it is seen as opening up the data to reveal and name these concepts (Strauss & Corbin, 1998). The constant comparative method is the means used to achieve this, whereby comparing similarities and differences between data incidents yields discrete concepts, which are then given names (Strauss & Corbin, 1998). Where the names given are sourced directly from the data, they are referred to as ‘*in vivo*’ codes (Strauss & Corbin, 1998; 1990). Naming of concepts may also be done using sociological constructs derived from an awareness and familiarity with the sociological literature (Glaser, 1992) and from the data and from the researcher’s prior theoretical understanding (Strauss & Corbin, 1998; Ryan & Bernard, 2003). These *a priori* themes can come from the characteristics of Web Analytics; from a consensus on professional definitions found in literature reviews, from local or commonsense constructs, from researcher’s values or theoretical orientations and from personal experiences.

Simplified practical steps to open coding (Ngwenyama, 2009b) are the following:

1. It is important to do in-depth investigations on empirical observations on recurring ideas. Empirical observations are more than the information collected from the research environment. They include interpretation of the explicit and implicit information which is derived from primary and secondary data sources.
2. Classifying empirical observations and stating links among themes should be done and reported.
3. A researcher conducting grounded theory's open coding should interpret and develop theoretical recommendations from empirical observations.
4. The themes must be confirmed by the interviewees within the organisation. In other words, the interpretation is based on the perceptions of the research participants from the organisation. It is important to state that the researcher should not include interpretations that are out of context (external to the research environment).

#### 3.6.5.2 Axial Coding

Axial coding is defined as “the process of relating categories to their sub-categories, termed ‘axial’ because coding occurs around the axis of a category, linking categories at the level of properties and dimensions” (Strauss & Corbin, 1998). A sub-category, in this instance, is subordinate to a main category, in that it answers questions such as who, where, when, why and how about that category (Strauss & Corbin, 1998).

In axial coding, Strauss and Corbin (1998, 1990) suggest the use of a paradigm model to identify how a category relates to its sub-categories. Such a model helps to integrate structure [the conditional context in which a phenomenon is situated], with process [sequences of action/interaction pertaining to a phenomenon] (Strauss & Corbin, 1998). In any phenomenon, routine or strategic actions/interactions yield certain outcomes, based on the actions taken (Strauss & Corbin, 1998). Their paradigm model supports their claim.

Causal conditions are those categories that have an influence on the phenomenon, and thus on the actions/interaction of subjects, whilst intervening conditions limit the impact of causal conditions on the phenomenon. Glaser (1992) defines a contextual condition simply as 'a condition of overriding scope, under which a set of related categories and properties occur'.

#### 3.6.5.3 Selective Coding

"To selectively code is to cease open coding and to delimit coding to those variables that relate to the core variable, in ways to be used in a parsimonious theory" (Glaser, 1992). Part of the process of selective coding according to Strauss and Corbin (1998) is the identification of a central category. Such a category, they assert, must be central, in that other major categories relate to it, and that with the majority of cases there are indicators pointing to it. It should also be able to explain variation and even contradicting evidence (Strauss & Corbin, 1998).

In refining the theory, Strauss and Corbin (1998) suggest one does the following: Review the conceptual schema for credibility and logic, fill in poorly developed categories, trim excess categories and validate the schema, through, for example, a high level comparative analysis with the data.

#### 3.6.5.4 HyperRESEARCH 2.81 Software

HyperRESEARCH is software for qualitative data analysis. It is a software tool for analysing text, graphic, video and audio source material. The version used in this study is the latest to date, version 2.81, the 'Free Limited Edition' available online at ([www.researchware.com/hr/downloads.html](http://www.researchware.com/hr/downloads.html)). The Limited Edition is limited to 7 cases and 75 codes, with no more than 50 code references per case. There are no other limitations and no timeouts; one can use the Limited Edition to create and save files, print, and use HyperRESEARCH features. After a manual process of analysis, the software tool, HyperRESEARCH was also used to analyse the collected data for the preponderance of the evidence found from the conventional analysis. Basic descriptive statistics were used for the preponderance of qualitative analysis outcomes.

HyperRESEARCH yielded the quantitative aspects of the analysis, where the main categories that were discovered in the research were the total number of occurrences of each key category, the minimum value of each key category, the maximum value for each key category, the mean and the standard deviation. A bar graph has been drawn from some of the quantitative data and it is in the next chapter.

### **3.7 Role of the researcher**

The researcher's role in the study was being a Digital Analyst in the online team, at the same time as using proven qualitative research methods to articulate challenges, while investigating solutions and applying them to the research environment. State of the art Web analytical tools were used to track performance and key metrics were developed that indicated end-user behaviour and areas for usability improvements. These inputs and requirements were taken from systems, marketing and also a call centre, with the key aim of understanding how the organisation's multiple channels work together.

Weekly Management Information (MI) reports were produced and disseminated for the digital environment, and recommendations for improvements were made which contributed to the development of the digital strategy. The researcher's Web Analytics experience is further demonstrated in Appendix E.

The main responsibilities of the researcher were:

- analysing Web site performance trends to provide strategic business insights
- analysing data from a variety of sources to back up marketing initiatives
- analysing data from a variety of sources to identify emerging trends and patterns, in order to produce recommendations for change
- analysing call centre online contacts to understand customer behaviour through multiple channel, in order to produce recommendations for change
- managing the Web Analytics toolset and the supplier relationships
- managing the organisation's Web Analytics benchmarking tool subscription and the supplier relationships
- working with the organisation's search agency to include search analysis
- collaborating with teams across the organisation to define reports, metrics and data needs to determine appropriate metrics to measure goals

- creating, updating, distributing and presenting digital analytical reports on a regular basis and in response to ad hoc requests
- working closely with the South African MI team to drive through digital requirements
- working with other MI/Insight teams to deliver a holistic view of the business

Certain grounded theory activities are integrated with the phases of action research. The key assumptions that are made by an action researcher are that social settings cannot be reduced for study, and that action brings understanding. These two assumptions imply a philosophy that allows interpretivism, idiographic studies and qualitative data.

The process of action research (Baskerville, 1999) was conducted in two-stages. Firstly, the diagnostic stage, which entails a joint analysis of the research environment in conjunction with the online team. Secondly, the therapeutic stage, which entails joint change trials, was conducted.

My strategic responsibilities of an action researcher were as follows:

- to ensure the appropriateness of the research method selected for the study
- to draw up a formal research contract between the selected organisation for the study and obtain written consent
- to provide a theoretical problem statement
- to plan data collection methods
- to sustain an environment of working together as a team
- to encourage cyclical problem solving practice and to ensure that interventions were implemented.
- To strive to be cognisant of any generalisations made, and to decide whether they were appropriate or not.

### **3.8 Bias in research**

It may be naive to assert that various forms of research, or perhaps human activity generally, is without bias (Lubbe, 2003). Even in the physical and life sciences the researchers' bias is reflected in the subject researched, the experiments chosen, as well as the way the experiment is conducted. Thus bias cannot be reduced but should be recognized and its implications acknowledged and accepted. Sub-conscience bias on the part of the researcher is a problem. Lubbe (2003) further warns that with regard to research findings, it is important that these are honestly presented and not produced in such a way as to simply support the opinions or prejudices of the researcher.

Sometimes, if not frequently, personal bias is so subtle that the researcher is not even aware of it. In fact, some would argue that a researcher should not attempt to compensate for this bias, but should simply state clearly the possible biases involved and allow the readers to compensate for them (Lubbe, 2003). There are biases in this research, because of the objectives of the research and the kind of research method used.

### **3.9 Research question formulation**

These questions were to be asked of the selected organisation in order to investigate challenges, current practices and the roles of the people involved in Web Analytics, as noted in chapter one. The questions were aligned to the objectives of the study.

#### **3.9.1 Broad categories identified from literature sensitivity**

A description of a process-based research framework for information systems research was used to generate the most appropriate questions for this research according to Roode's (1993) technique. The 'what', 'why', 'how', and 'how should' questions were asked under identified categories of the study. These five categories include: organisation, adoption and/or implementation, challenges, practice, and people. These broad categories were identified from the literature sensitisation in chapter two.



### **3.9.2 Organisation**

#### **How does the Web Analytics strategy align with the organisational strategy?**

- What problems are related to Web Analytics in an organisation?
- What is the content of the organisation's Web site?
- What are the organisation's objectives?
- What are the objectives of the organisation's Web site?
- How do the Web site objectives align with the organisation's objectives?
- How are organisational plans defined?
- How are the plans of Web Analytics defined?
- How does Web Analytics align with organisational plans?
- What is the organisation strategy?
- How does Web Analytics in an organisation affect customer acquisition and retention?

### **3.9.3 Adoption and / or Implementation**

#### **What is the current Web Analytics adoption or implementation strategy within the organisation and how does that impact the organisation?**

- What is Web Analytics adoption?
- Why is Web Analytics adoption defined like that?
- How should Web Analytics be adopted?
- Why do some potential clients resist the adoption of Web Analytics?
- What is the meaning of Web Analytics implementation?
- How should Web Analytics be implemented in an organisation?
- How should potential clients be motivated to adopt Web Analytics?

### 3.9.4 Challenges

#### **What are the Web Analytics challenges and how can they be minimised?**

- What are the challenges of Web Analytics?
- How are the challenges defined?
- Why are they defined like that?
- How should the challenges of Web Analytics be minimised or overcome?
- What are the Web Analytics adoption challenges?
- What are the Web Analytics implementation challenges?
- How should current practice challenges be minimised or overcome?

### 3.9.5 Practice

#### **How is possible to get value from Web Analytics and why is it preferable to utilise Web Analytics in that way?**

- What is the current practice of adopting and implementing Web Analytics in your company?
- What are the challenges in the current practice?
- Why is the current practice the way it is?
- What are the challenges in the current practice?
- Why is the current practice in your company the way it is?
- How should the current practice be?
- How do you attract online visitors to your Web site?
- How is success in Web Analytics recognised?
- How do Web Analytics users define the success of Web Analytics?
- Why is the success defined like that?
- How should it be defined?
- What are the demands for facilitating Web Analytics:
  - from your company (clients of resellers / vendors)?
  - from the people directly involved in Web Analytics?
  - from online visitors (and online customers)?
- How should the demands for facilitating Web Analytics be managed?
- How do some of the competitors facilitate Web Analytics?

### **3.9.6 People**

#### **Who are the Web Analytics stakeholders and how do they perceive their roles?**

- Who are the people involved in Web Analytics and what is their role?
- How do the people directly involved in Web Analytics perceive their role?
- What are the views of the people involved in Web Analytics with regard to Web Analytics?
- How do clients of an online marketing organisation perceive their role with regard to Web Analytics?
- How should the people involved in Web Analytics conduct their roles?
- How should the clients of an online marketing organisation conduct the role with regard to Web Analytics?

From the five categories, two main questions were derived, forming a primary research question and a secondary research question.

#### **3.9.1 Primary research question**

How do SMEs (Small and medium enterprises) involved in e-commerce approach the implementation of Web Analytics?

#### **3.9.2 Secondary research question**

What problems do SMEs encounter, and what model would be helpful in successful integration of Web Analytics in the context of their online presence?

From the primary research question, the secondary research question and the five categories, a list of qualitative interview questions was compiled. The actual questions that were asked from the organisation that has adopted and implemented Web Analytics are documented in the appendices (refer to Appendix B). The set of interview questions changed from one interview to another because of grounded theory procedure as suggested by Corbin and Strauss (1990). They suggest that analysis takes place from the beginning, because it is used to formulate the next set of interview questions. Before, during and after each interview, it was important to be mindful of ethical issues. The next section explains the ethical standards.

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### **3.10 Role of Human Subjects and Ethics in Social Science Research**

The Ethics Committee of the Faculty of Commerce (to which the Department of Information systems belongs) at the University of Cape Town reviews the proposed interview questions and provides guidelines for research undertaken in the faculty. The Committee approved this study, including the research questions, in 2008. The study was conducted with appropriate approval. Analytix Trailblazer Inc., granted permission to conduct the research study in the organisation. The decision was communicated to the executive members and there was a signed agreement.

Before each interview, informed consent was obtained from the interviewee, and each of them was briefed about the study. Informed consent was obtained to make interviewees feel at ease with the questions and answers. Informed consent entails neither doing harm to nor inflicting physical or psychological injury on respondents (Neuman, 1994).

With informed consent, it is unlikely that the research results will be negatively influenced, as the study would be well understood by participants. The interviewer has an obligation to be ethical, whether or not the interviewees understand, are aware of, or are concerned about ethics (Neuman, 1994).

Anonymity was guaranteed in an effort to uphold research principles and to maintain respondents' rights and values. In other words, information disclosed by interviewees was treated confidentially and a commitment was made not to reveal respondents' identities. Respondents were allowed to withdraw from the study if they so wished.

### **3.11 Generalisability**

The term "generalisability" refers to the usefulness of a theoretical construct outside of its limited domain of known observations (Baskerville, 1996). Generalisations can take the form of concepts, theories, specific implications or rich insights (Walsham, 2006). Induction refers to a process of reasoning and can be a synonym for generalising (Lee & Baskerville, 2003).

As mentioned in Chapter One, there are four types of generalisability (Darke *et al.*, 1998; Lee & Baskerville, 2003; Walsham, 2006):

- Type EE generalisability: this means generalising from data to description
- Type ET generalisability: this means generalising from description to theory
- Type TE generalisability: this means generalising from theory to description
- Type TT generalisability: this means generalising from concepts to theory

Generalisation is possible in this study and it is not limited to the number of cases done (Myers, 1999; Lee & Baskerville, 2003; Dubé & Paré, 2003; Walsham, 2006). Issues of generalisability are closely related to theory development (Cecez-Kecmanovic, 2005). In this study, Type EE, Type TE and Type TT generalisability will be used, but not Type ET. These types are described in the following paragraphs.

In Type EE generalisability, the researcher generalises from empirical statements (as inputs to generalising) to other empirical statements (as outputs of generalizing). This type of reasoning involves generalisability in two ways: The generalisability of data to a measurement, observation, or other description (such as a descriptive statistic or a deep description) and the generalisability of the resulting measurement, observation, or other description beyond the sample or domain from which the researcher has actually collected data (such as generalising to the unsampled portion of the population or to the people in the corporation who were not interviewed). In either case, the product of the generalising to be a description (Lee & Baskerville, 2003).

In Type ET generalisability, the researcher generalises from empirical statements (as inputs to generalising) to theoretical statements (as outputs of generalising) (Lee & Baskerville, 2003). Generalising from experimental findings to theory, generalising from case study findings to theory, and generalising from population characteristics to theory (Lee & Baskerville, 2003). In Type TT generalisability, a researcher generalizes from theoretical propositions in the form of concepts (such as a variable, an a priori construct, or another concept) to the theoretical propositions that make up a theory (specifically, a set of logically consistent propositions that, pending the results of empirical testing, could qualify as a theory) (Lee & Baskerville, 2003).

The other-settings generalization, described by (Seddon & Scheepers, 2006; Nicolajsen & Scheepers, 2008) is also used in this study, because generalisability claims require to be tested practically in follow-up research in clearly described research environments. The application of generalisation and other-setting generalization, in this study, is going to follow the example of Thomas and Fernández (2008) in their study of: ‘Success in IT projects: A matter of definition?’ because of similar contextual conditions and the similar level abstraction (Nicolajsen & Scheepers, 2008; Thomas & Fernández, 2008). Figure 3.11 illustrates how generalisations are applied in this study.

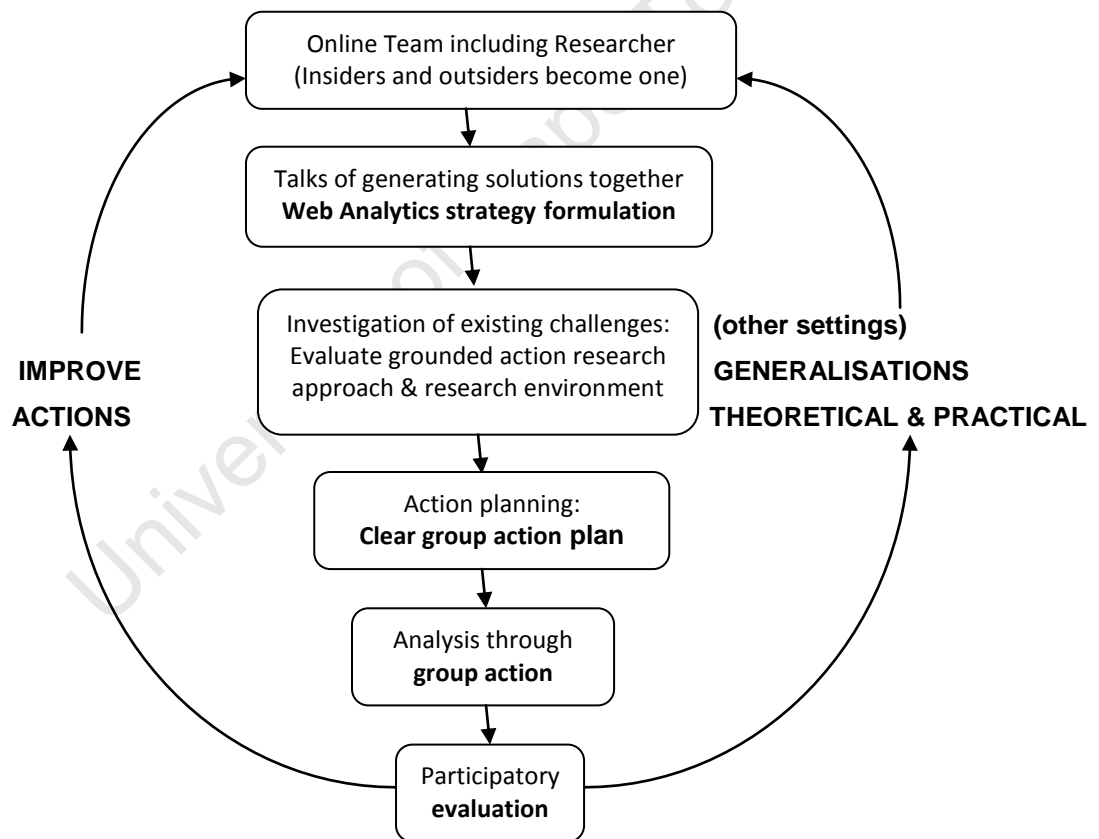


Figure 3.11 Grounded action research cycle adapted from Byrne and Sahay (2005)

The handling of generalisability in Information systems is challenged in many dimensions (Seddon & Scheepers, 2006). These authors (Seddon & Scheepers) broaden the generalisability debate by interrogating Lee and Baskerville's (2003) generalisability research.

They claim that Lee and Baskerville (2003) reported unstable treatment of generalisability in Information systems. They elaborate on this by stating that there are many generalisability problems, and with respect to case studies, Lee and Baskerville (2003) identify a dozen studies where case-study researchers understate the likely generalisability of their results. They claim to improve on Lee and Baskerville's (2003) opinion of generalisability by coming up with a concept they call: other-setting generalisability. They argue that a discussion of other-settings generalisability would provide the reader with access to useful insights the researchers may have about the likely limits in the applicability of their results to settings other than those on which the findings are based. They define other-settings generalisability as:

the researcher's act of arguing, based on the representativeness of the sample, that there is a reasonable expectation that a knowledge claim already believed to be true in one or more settings is also true in other clearly defined settings.

The authors (Rodon & Sesé, 2006; Seddon & Scheepers, 2008) further list a set of key characteristics of sound other-settings generalisations as follows:

1. Human knowledge is bounded, particularly in Information systems
2. Knowledge claims, including generalisations, are subject to revision
3. Objective reality exists (this is a soft-positivist ontological stance)
4. Truth beyond reasonable doubt is sufficient (this is a scientific-realist definition of truth)
5. The sound basis for generalisation of knowledge claims is the representativeness of the sample(s) on which the knowledge claim is based
6. Representativeness is demonstrated by comparing key characteristics of the proposition being tested in the sample and target population

Other-setting generalisability is arguably the most important subset of the range of concepts presented in Lee and Baskerville's (2003) generalisation framework (Rodon & Sesé, 2006; Seddon & Scheepers, 2006). This set of ideas provides a clear, simple conceptualization of generalisation that should be useful for future Information systems research, positivist or interpretive, quantitative or qualitative.

Further, sound other-settings generalisations of research findings need to satisfy the following three requirements (Rodon & Sesé, 2006; Seddon & Scheepers, 2006):

1. The researcher must clearly define the larger set of things to which the generalisation applies;
2. The justification for making other-settings generalisations ultimately depends on the representativeness of the sample, not the use of statistics;
3. Representativeness is judged by comparing key characteristics of the proposition being generalized in the sample and target population.

Three of the reasons why the discussion of other-settings generalisations is important in future Information systems research are, according to (Seddon & Scheepers, 2006):

- First, Information systems is an applied discipline. It is therefore important that the implications for practitioners of Information systems research findings be discussed as clearly and openly as possible.
- Second, with increasing globalization of Information systems research, limits to generalisability of findings between different contexts need to be discussed more clearly than they have in the past (Seddon & Scheepers, 2006; Nicolajsen & Scheepers, 2008).
- Third, since knowledge claims are restricted, academic thoroughness demands that restrictions of applicability of any knowledge claims be cautiously described.

Generalisation in information systems research is important because of the highly applied and professional nature of the field (Baskerville, 1996; Choudrie & Dwivedi, 2005; Rodon & Sesé, 2006). An interpretive theory developed in a particular setting is obviously first tested in the setting in which it is developed – it is judged as truthful or adequate by the people studied if it makes sense for them (Cecez-Kecmanovic, 2005). A theory, however, is also tested by its capacity to convey a deep understanding. In this study, the test will be to convey a deep understanding of Web Analytics and the actors studied in their particular social setting to other actors beyond this setting.



In other words, explanatory power of an interpretive theory depends on the degree to which its description and interpretation transcend a particular context and translate into a form comprehensible to readers who did not participate in the study. The more a theory provides rich descriptions, the more it captures clear, dependable and credible details from the context, the easier it becomes for the reader to achieve a deep understanding of the meanings of the actions by of the people involved, and to get a feel for another social reality or 'form of life'. In such a way, a theory becomes meaningful to actors in other contexts (Cecez-Kecmanovic, 2005).

There is a generalisation debate for researchers in information systems (IS). One school of thought is positivistic about "statistical generalisability" (Finfgeld-Connett, 2010; Vicsek, 2010). That type of generalisability is used in statistic-based studies to indicate the probable mathematical relationships between observations of phenomena in a sample and the phenomena in the corresponding population (Baskerville, 1996; Finfgeld-Connett, 2010; Vicsek 2010).

The other school of thought use "analytical generalisability" in an interpretive way, as a reference to the general case (Baskerville, 1996; Lee & Baskerville, 2003). The general case is an abstract conceptual phenomenon that shares certain defined characteristics with a bounded set of observations in Web Analytics implementation. The broad and strict sense of the term differs in the importance of statistical sampling for delineating the general case (Baskerville, 1996). For Information systems research, the broad sense of generalisability is a key criterion for success. This is because the general case for any theory is closely related to relevance and practicability. Relevance is the usefulness of research to its audience, which may include other researchers or other practitioners. This relevance is an important criterion for assessing the success of Information systems research (Baskerville, 1996). Practicability is the ability to place the theory into practice (Baskerville, 1996). This ability regards the practical usefulness of research findings in either day-to-day or strategic decision making by Information systems professionals (Baskerville, 1996). Research becomes generalisable because its usefulness is apparent (it is relevant), and the mechanics of using it are apparent (it is practicable). This link between generalisability, through relevance and practicability, is particularly important to Information systems research because the Information systems research field is highly applied, and professional in nature (Baskerville, 1996).

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### 3.12 Credibility and dependability

It is critical when conducting qualitative analysis to maximise the credibility of the findings. In a qualitative study, the validity criteria that may be used include: (1) credibility, (2) transferability, (3) dependability and (4) conformability (Anfara, Brown & Mangione, 2002). There are more validity criteria that are suggested by Anfara, Brown and Mangione (2002) quoting Eisenhart and Howe (1992).

These criteria include: (1) ensuring a fit between research questions, data collection procedures, and analytic techniques, (2) ensuring the effective application of specific data collection and analytic techniques, (3) being alert to and cognisant of prior knowledge, (4) being cognisant of both internal and external value constraints, and (5) assessing a study's comprehensiveness. There are eight reliability procedures suggested by Creswell and Miller (2000): (1) prolonged engagement and persistent observations, (2) triangulation, (3) peer review or debriefing, (4) negative case analysis, (5) clarifying researcher bias, (6) member checks, (7) deep description, and (8) external audits. The authors (Creswell, 1998; Anfara, Brown & Mangione, 2002) further recommend that researchers use at least two of these eight reliability procedures in any given study.

In this study an audit trail of the changes made was kept. The grounded theory memos were kept together with updating an explanatory Excel spreadsheet was updated frequently. Member checking was selected as a technique to maintain credibility and validity, because the meaning and the empirical observations had to be in the context of the research environment, therefore some of the research participants were asked to conduct member checks. Generalisability which includes issues of internal validity and transferability in theory development, as mentioned above, was used to increase the credibility and the dependability of the study.

### 3.13 An overview of action research

There are various ways to arrange the cycles in action research. Table 3.13 outlines the course of action for this study that is based on Susman and Evered (1978) study. Susman and Evered's (1978) traditional process emphasises diagnosing, action planning, action taking, evaluating, and specifying learning, as shown above.

These authors together with Iversen *et al* (2004) argue that action research entails a problem solving cycle and a research cycle. The lessening of challenges and the research cycle are interconnected and in practice, they usually join together (Iversen *et al*, 2004).

|                   | <b>(Susman &amp; Evered, 1978)</b>   | <b>Researcher's course of action</b>  |
|-------------------|--|---|
| <b>Initiating</b> | Establish the client-system infrastructure   | 1. Select an approach suitable for research problem<br>2. Understand the background and Web Analytics strategic problem                   |
| <b>Iterating</b>  | 1. Diagnosing<br>2. Action planning<br>3. Action taking<br>4. Evaluating<br>5. Specifying learning | 3. Apply approach<br>4. Assess experiences<br>5. Evaluate in terms of challenge lessening & research questions<br>6. Reassess experiences |
| <b>Closing</b>    |  | 7. Reflect on experience<br>8. Depart<br>9. Generalise to other settings<br>10. Bring out research results                                |

Table 3.13 An overview of action research course of action (adapted from Iversen *et al*, 2004)

The researcher's action research course of action was based on Susman & Evered's (1978) study and was appropriated to the research environment at Analytix Trailblazer Inc. The process was concerted and cyclical. There was a set of principles (Iversen *et al*, 2004) followed, namely: roles, documentation, control, usefulness, theory and transfer.

The roles of the research respondents and the researcher roles were already ascertained. These roles were taken over and described in this study. Analytix Trailblazer Inc. needed someone who was going to use state of the art Web Analytical tools to track performance, develop key metrics that indicate end-user behaviour and areas for usability improvements. The researcher was going to do that. The researcher was also going to take inputs, requirements from systems, marketing and also call centre, with the key aim of understanding how our multiple channels work together. Another role of the researcher was to produce, own and disseminate weekly Management Information reports for the digital environment, make recommendations for improvements and contribute to the development of the digital strategy.

The roles of the researcher and those of the members of the Online Team were clarified. Definition of roles assisted establishing participation from researcher and clarified the discipline that is required from members of the Online Team in the collaboration.

It was the role of the researcher to document research findings in each phase of the research. Describing the data collection approach in detail is a key discipline that distinguishes research from consulting (Baskerville & Word-Harper, 1996). Audio tapes from interviews, transcripts from recordings, meeting minutes, strategy presentations, periodic reports, ad-hoc reports, memos, researcher's notes, e-mail correspondence from Web Analytics stakeholders, and a spreadsheet with iterations of analyses were documented and stored. Documentation supported problem solving and research goals. It also substantiated and justified to the company how some decisions were made. Important reports and important research findings were verified by two senior members of the Online Team to ensure data quality. Sometimes, an external consulting company was contracted to ensure data quality.

The researcher and the Head of Online together exercised authority over the process in the first case organisation. A formal contract between the researcher and the first case organisation governed the grounded action research. The researcher exercised authority over the process in the second case organisation. A formal contract between the researcher and the second case organisation governed the grounded action research. There were also informal agreements and commitments between the research participants and the researcher. Usefulness of the recommendations made had to be determined. The legitimacy of the value added relied on whether satisfactory change was produced. Two senior members within the company reviewed the recommendations made and gave positive feedback regarding usefulness. Adoption theories and Web Analytics studies were reviewed and gaps in the literature were highlighted. A comparison was made to establish whether the recommendations made address some of the gaps in the literature. Feedback was requested from business owners and Web Analytics experts to establish usefulness of recommendations made. It was determined whether the results could be generalised and adapted in other settings. It was ascertained that it is possible to make the recommendations understandable to others for usability in other contexts.

### **3.13.1 Initiation**

The research approach to be implemented in the research environment was determined by understanding the research questions in the study and therefore a research approach was selected as discussed in chapter three. When the Web Analytics strategic challenge became known at Analytix Trailblazer Inc. and the researcher was looking for companies to assist with qualitative interviews, a proposal was made to Analytix Trailblazer Inc. Communication with Analytix Trailblazer Inc. started in January 2009. After three meetings and twelve telephonic discussions with Analytix Trailblazer Inc. a formal researcher-client agreement was in place. The action research project was executed from March 2009 to May 2011. Analytix Trailblazer Inc. was available via e-mail for further input towards the research until May 2011. The action research then went through four cycles before closing.

### **3.13.2 First iteration**

It was important to investigate how Analytix Trailblazer Inc. approached adoption and implementation of Web Analytics. This was going to be investigated through finding out from the people who were involved in Web Analytics in the organisation. The first weekly meeting was attended. The Online Team and the researcher attended the meeting. It was conducted via video conferencing because of virtual teams in South Africa and in the United Kingdom. Key Web Analytics stakeholders in the company were identified for qualitative interviews. Relevant Web Analytics stakeholders were going to attend the week steering committee meeting when it is necessary.

Formal interviews were conducted with seven Web Analytics stakeholders. Some Web Analytics stakeholders could not participate in formal interviews due to either leaving the organisation or due to other urgent commitments. The researcher was able to ask further questions from the Web Analytics stakeholders informally at different times. Some questions were addressed during the weekly meetings. Open coding, axial coding, selective coding and memo-ing was done during the formal interviews. The formal interviews were recorded by a Dictaphone. Transcripts were written from the recorded interviews. A spreadsheet was kept with the outcomes of the coding done. Memos were documented.

### 3.13.3 Second iteration

This iteration was started by appreciating lesson learned from the grounded theory that is applied with action research. Senior members of the Online Team and the researcher were involved at this stage. Senior members of the Online Team were impressed by the research progress and the findings that were reported. The researcher was participating well in the digital strategic projects. One of the major Web Analytics strategy projects was the assessment of the Web Analytics vendors currently used. There was a challenge of selecting a new Web Analytics vendor or keeping the existing one.

There were 133 Web Analytics vendors (see Appendix A-1) that were found and contacted to assess their suitability for the company.

A high level set of requirements (see Appendix F) based on the company's needs, was compiled to assist Analytix Trailblazer Inc. understand options available for them in selecting a Web Analytics package or two.

Key decision criteria (see Appendix A-4) and the high level set of requirements (see Appendix F) were used to eliminate Web Analytics vendors from 133 to 39. Further elimination had to be done from 39 vendors (see Appendix A-2) to 23 vendors (see Appendix A-3) using key decision criteria and the high level set of requirements (see Appendix F). The vendor list was then eliminated to four vendors and the remaining four had to either do a digital demonstration or present at the United Kingdom offices. After the presentations from the vendors, there were two vendors who met the high level set of requirements (see Appendix F). It was decided that it was feasible to recommend two Web Analytics vendors, when the time to migrate to a new Web Analytics package was determined. A decision was taken to use a free Web Analytics tool in the interim while thorough research was being conducted. The vendors were contacted a number of times to confirm more information. This process was cyclical.

### 3.13.4 Third iteration

From grounded action research iterations above, more challenges were identified from respondents. At this point, it was important to analyse the challenges and group them. In the quest to investigate the types of problems that companies who are novices in Web Analytics encounter, and what model would be helpful in successful integration of Web Analytics in the context of their online presence, iteration took place. Cyclical analysis was done until there were twelve types of problem reported.

The research model and the twelve guidelines to minimise adopting and implementing Web Analytics were developed from data collection and analysed done. Categories that were illustrated after the third iteration are:

- Programme Change Management (PCM)
- Management Information (MI)
- Knowledge Management (KM)
- Web Analytics (WA)
- Customer Experience
- Problems
- Innovation

### 3.13.5 Fourth iteration

After getting some recommendations from an external consulting organisation and feedback from research experts, another case organisation was approached to conduct formal interviews, so that the research model could be refined. The second case organisation was sought after so that the grounded action research may reach a saturation point in another setting. A pseudo name given to the second research environment is *Web Analytics Masters (WAM)*. There were four formal interviews conducted at *Web Analytics Masters (WAM)*. The fifth interview with the Copywriter could not be conducted due to other work-related commitments that the Copywriter had. The proposed model evolved after the formal interviews conducted at *Web Analytics Masters (WAM)*. There was more clarity and definition to the model. The research model was divided into a domain model and a process model.

Conducting more interviews at the second case organisation has a positive impact for generalisability of results from the first case organisation. Categories that were illustrated after the fourth iteration are:

- Programme Change Management (PCM)
- Management Information (MI)
- Knowledge Management (KM)
- Web Analytics (WA)
- Customer Experience
- Internal & External Business Relationships
- Innovation

At this stage, adoption model and Web Analytics frameworks literature was reviewed and compared to the grounded action research findings. Gaps in the literature were highlighted and suggestions were offered on how to address the gaps.

The domain model, the process model and the twelve guidelines to minimise adopting and implementing Web Analytics were developed and were sent to senior team members of the Online Team for review. Senior team members saw an improvement from the initial model and gave positive feedback regarding the usefulness of the models together with the guidelines. Discussions took place regarding circulation and taking on the recommendations to relevant stakeholders in the organisation. The action research then went through four cycles before closing.

#### **3.13.6 Closing**

The researcher decided to reflect on the experiences at the research environment before departing from the environment, so that clarity may be sought if necessary. The analysis that was done, the domain model, the process model and the twelve guidelines produced in the study were discussed among two senior members of the team and the researcher.



The actions that were the outcomes of the discussions were: (1) to maintain top management support, (2) to include thorough research for business requirements pertaining to online projects, (3) to include a Web Analytics strategy in planning phases before online projects start, (4) to formalise the process of requesting ad hoc and scheduled reports through filling in a Management Information request form, and (5) to produce results that are helpful to online projects. These actions were taken at a later stage.

There was a planned diffusion and adoption of the recommendations made. Top management together with the researcher communicated with Web Analytics stakeholders in the company regarding disseminating and taking up the improved practice within their various teams. This was done through workshops, written communication and discussions of getting 'buy in' from division heads in the company.

The improved practice was circulated to relevant Web Analytics stakeholders and it was embraced by them. It was decided to depart from the companies at this point, because the researcher had to conduct generalisability in other research settings. Generalisability was conducted through member checking.

Two business owners and three Web Analytics experts from various companies assisted in generalising the research results in other settings. One business owner and another Web Analytics expert agreed to assist with generalisability, however due to unforeseen circumstances; they were not available for the interviews. The final activity was to bring forth findings for the grounded action research attempt. The following section summarises the chapter. Figure 3.13 illustrates the overview of the research process below.

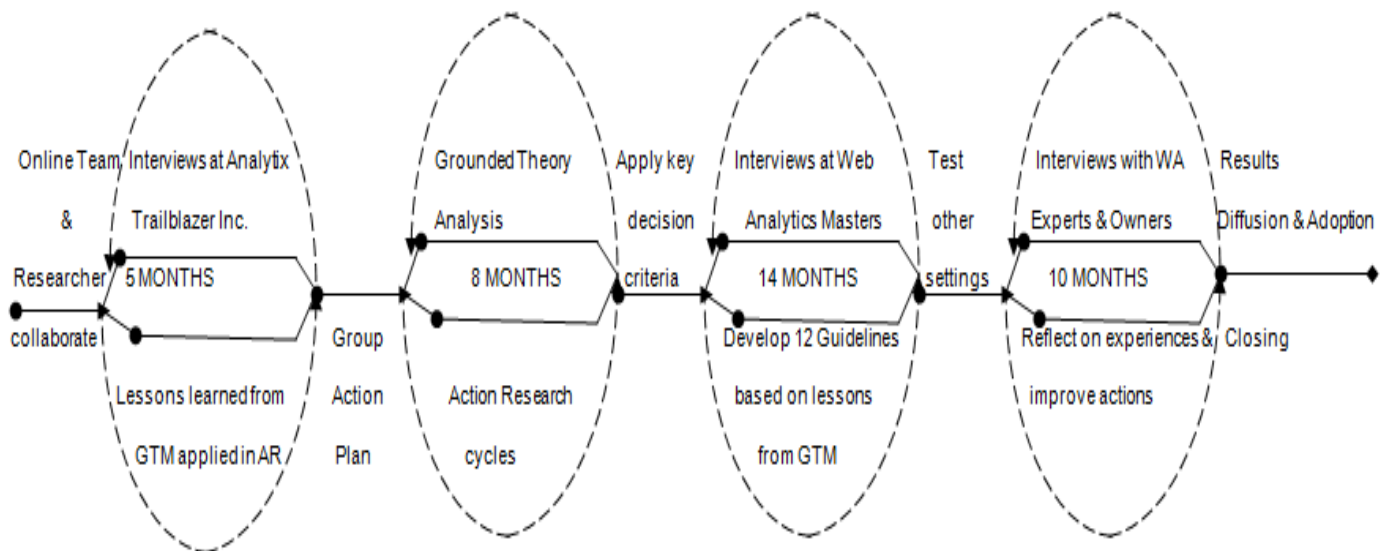


Figure 3.13 An Overview of the Research Process

### 3.14 Summary

The five major elements of the research design are topic area of interest, idea context, research questions, methods, and credibility and dependability. These, together with the philosophical assumptions and research paradigms, continue to guide this study. The Ethics Committee of the Faculty of Commerce (to which the Department of Information systems belongs) at the University of Cape Town reviews the proposed interview questions and guidelines of research undertaken in the faculty. The Committee approved this study, including the research questions, in 2008. In this study an audit trail of the changes made was kept. The grounded theory memos were kept and an explanatory Excel spreadsheet was updated frequently. Member checking was selected as a technique to maintain credibility and validity, because the meaning and the empirical observations have to be in the context of the research environment, therefore some of the research participants were asked to conduct member checks.

A treatment of the generalisability of the research results was introduced in this chapter and it is applied in the next two chapters. The next chapter discusses the research results. The core categories of the research environment in this study are described and explored together with some quotes from respondents.

## CHAPTER FOUR

|          |  |            |
|----------|--|------------|
| <b>4</b> | <b>RESEARCH RESULTS AND INTERPRETATION OF RESULTS.....</b>           | <b>130</b> |
| 4.1      | Introduction .....   | 130        |
| 4.2      | Memo-ing .....   | 131        |
| 4.3      | Intervention diagnosis .....   | 131        |
| 4.4      | Action planning .....  | 132        |
| 4.5      | Action taking and participatory observations .....                   | 133        |
| 4.6      | Outcome .....  | 135        |
| 4.7      | Stipulation of iterative learning .....                              | 135        |
| 4.8      | Analysis of grounded action research .....                           | 135        |
| 4.9      | A discussion of guidelines for minimising WA problems .....          | 160        |
| 4.10     | Collapsed categories for the study, after the fourth iteration ..... | 168        |
| 4.10.1   | Programme Change Management.....                                     | 170        |
| 4.10.2   | Management Information .....   | 176        |
| 4.10.3   | Knowledge Management .....   | 177        |
| 4.10.4   | Web Analytics .....  | 178        |
| 4.10.5   | Customer Experience .....  | 181        |
| 4.10.6   | Problems.....  | 182        |
| 4.10.7   | Innovation .....   | 185        |
| 4.10.8   | Internal and external business relationships .....                   | 186        |
| 4.11     | Links and relationships for the core categories .....                | 187        |
| 4.12     | Illustration of the study .....                                      | 188        |
| 4.13     | HyperRESEARCH analysis report .....                                  | 191        |
| 4.14     | Adoption models and Web Analytics models .....                       | 194        |
| 4.15.1   | E-business and e-commerce adoption models .....                      | 194        |
| 4.15.2   | Existing Web Analytics process models or frameworks .....            | 199        |
| 4.15.3   | Gaps in the existing models .....                                    | 202        |
| 4.16     | An expansion and an evolution of the model .....                     | 205        |
| 4.17     | Interpretation of the proposed model .....                           | 206        |
| 4.18     | Generalisability .....   | 212        |
| 4.18.1   | Member checking.....   | 212        |
| 4.18.2.1 | Feedback from business owners and Web Analytics experts.....         | 213        |
| 4.19     | Summary.....   | 218        |

## **4 RESEARCH RESULTS AND INTERPRETATION OF RESULTS**

### **4.1 Introduction**

This chapter provides an in-depth discussion of grounded action research analysis. The chapter commences with intervention diagnosis and then explains the iterative memo-ing process. The research methodology used is grounded action research and it has been described further in Chapter 3. The analysis of action research cycles and the grounded analysis were conducted in parallel. The grounded theory method memos that have been written throughout the study are discussed and the evidence is attached as an appendix. Action planning highlights the thought process that was done before any actions and participatory observations took place. The outcomes and the stipulation of iterative learning of action research are stated.

The findings from the Web Analytics investigation, qualitative interviews from respondents and the core categories of the research environment in this study are described and explored, together with some quotations from respondents. The proposed models for Web Analytics adoption and implementation are illustrated and analysed. An argument is put forward about the gaps in the existing models and recommendations are offered on these proposed models will address these gaps.

The last section of the chapter present an interpretation of the findings extracted from the analyses of the grounded theory. An expansion and an evolution of the model is described and explained. An interpretation of the proposed model from the research results is used to apply the model proposed in the study, and it is described and explained. Due to problems identified in the study, it was found necessary to include, from literature, ten ways to succeed in turning digital strategy into action. A recommendation is made of twelve guidelines for minimising Web Analytics related problems. These guidelines are generalised to other studies and to another research environment. The chapter concludes with an overview of action research in this study.

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## 4.2 Memo-ing

A memo was written after the analysis of each interview and the memo was updated after each cycle of analysis. A general memo was also kept at the end of the analysis of the interviews. Cyclical analysis continued and the memos were updated appropriately. Appendix D has the memos that were written. The categories that have emerged from grounded theory have been linked to action research by the challenges that are faced by each category. Each category of the grounded analysis synopsis illustrated in Table 4.3 has challenges and that was highlighted by the action research analysis.

## 4.3 Intervention diagnosis

The initial diagnosis discovered that a lot of people within the organisation had little information about Web Analytics. There was no trained, experienced Web Analyst available. There were no guidelines for adopting and implementing Web Analytics in the organisation. The haphazard way which the previous Web Analytics tool had been adopted and implemented was yielding persistent and inherent problems. No requirements analysis had been done, specifically for the organisation for adopting and implementing Web Analytics. The following section highlights how the core categories were coded.

The four steps of open coding (Ngwenyama, 2009b) were followed. The themes and categories are not exhaustive; they are a reflection of responses from the interviewees. The responses were analysed and interpreted. The themes were formed during the categorisation process. The sub-categories were linked to categories. Then, collectively, more cyclical analysis was done. After the second iteration, a number of categories were derived from the sub-categories. These categories were reduced to the following nineteen categories: Change Management, Customer Journey, Decision Support System (DSS), Facilitating Conditions, Innovation, Knowledge, MI Reports, Problems, Quality Metrics, Quality Assurance, Quantitative Metrics, Resources, Revenue, Services Rendered, Strategy, Web Analytics, Web Analytics Adoption, Web Analytics Implementation, and Web Analytics Benefits. For each of these categories there are sub-categories that have been grouped appropriately as shown in Table 4.3.

| Category                                     | Sub-categories   |
|--|--|
| Change Management                            | consisted of advancement, maintenance, trends and practice   |
| Customer Journey                             | consisted of behaviour, conversion, online activity, online processes, referrals, retention, satisfaction, Web site usability and customer funnel              |
| Decision Support System (DSS)                | consisted of decision-making, business intelligence (BI) and complexity  |
| Facilitating Conditions                      | consisted of support, and training   |
| Internal and external business relationships | consisted of networks, business units, suppliers, vendors,   |
| Knowledge                                    | consisted of experience, expertise and understanding   |
| MI Reports                                   | consisted of integrated reporting  |
| Problems                                     | consisted of challenges  |
| Qualitative Metrics                          | consisted of qualitative measures  |
| Quality Assurance                            | consisted of trust, credibility, benchmark, benchmarking, and redundancy   |
| Quantitative Metrics                         | consisted of quantitative measures   |
| Resources                                    | consisted of human resources, people, person, Web Analytics team (virtual team), function, work, position, relationships, process resources and infrastructure |
| Web Analytics Adoption                       | consisted of Web Analytics packages, Key owner, Ownership and Web site types   |
| Web Analytics Implementation                 | consisted of Business Process, Business Requirements, Recommendations, Communication to clients and Communication within the team                              |
| Web Analytics Benefits                       | consisted of Web Analytics value   |

Table 4.3 Categories derived from sub-categories

#### 4.4 Action planning

The action plans were to carefully design and specify the data collection techniques clearly. One of the organisation's plans was to find, train and develop a Digital Business Intelligence Manager/Digital Analyst.

It was intended that the Digital Analyst would take ownership of online Management Information (MI) and would improve the organisation's Web Analytics practice. Guidelines needed to be formulated to start the process of adopting and implementing a new Web Analytics tool. A list of requirements for selecting a new Web Analytics tool, specific to the organisation, had to be compiled and reviewed by this researcher. This process included individual qualitative interviews, report compilations, report reviews, documentation reviews, Web site analysis and participatory observations.

#### **4.5 Action taking and participatory observations**

The data collection methods were reviewed before getting started. A formal research agreement between the researcher and the selected team members from the organisation of study was established. A theoretical problem statement was provided. Each human subject of the study gave an informed consent.

The online team was involved in regular meetings to discuss guidelines, specific requirements, and qualitative interviews with regard to Web Analytics strategy. The team had important knowledge of theory and the research environment. A list of requirements was reviewed and improved by the researcher. The requirements were used to select a shortlist of five possible suppliers of Web Analytics. Grounded action research was conducted, which included participatory observations and intervention. The recommendations that were made were reviewed by this researcher and another cycle of research to find out more questions from the possible suppliers took place. The final shortlist contained two suppliers of Web Analytics.

Empirical observations or incidents from the data built theoretical constructions, called concepts (Ngwenyama, 2009b). Participatory observations that were done included quantitative reports that were collated and produced on a weekly basis. An Online MI Steering Committee Summary was produced and presented at the weekly meetings. The metrics of the reports are illustrated in Appendix C.

The Online MI Steering Committee Summary consisted of quantitative data which was reported on under the following headings:

- Online Visits
- New Business Activations for an Individual who comes directly
- Call Centre and Service Desk
- Digital Welcome
- Digital Servicing
- Online Customer Engagement
- Online Wellness Engagement
- Channel Wellness Engagement (this included Online/Suppliers/Call Centre)
- Online Advisor Engagement and
- Online Organisation Engagement

Structured Query Language (SQL) scripts were written by the researcher in order to have some of the above-mentioned metrics developed by MI developers and MI analysts. After the reports were developed, they were run them from Cognos and produced statistics. Some metrics were obtained from Web Analytics tools. Other metrics were gathered from Citrix Notification Engine, from the reports and from the queries. Some metrics were derived values.

Periodically, the team leaders of the various sections that pertained to the weekly report were consulted. Two of the sections, namely New Business Activations and Call Centre, provided the quantitative data that it could be incorporate it in the weekly report, and then analysed to look for correlation with other data that was has been gathered. A commentary for the Management Committee was written after compiling each weekly report. The various Web Analytics stakeholders were observed in the weekly Online MI Steering Committee meeting and also in their working areas outside the meeting boardrooms.



## **4.6 Outcome**

The initial outcome seemed satisfactory. Grounded action research was found appropriate for the research question and was of interest to the audience. The organisation's management, the online team and Web Analytics stakeholders were impressed, intrigued and motivated to pursue the proposed guidelines. More in-depth investigations needed to be done.

## **4.7 Stipulation of iterative learning**

The qualitative interview questions had to be reviewed after each interview because of the overall time taken to conduct the interviews and to keep the questions relevant to the investigation.

## **4.8 Analysis of grounded action research**

There are a number of challenges that emerged from the analysis described above, in line with the action research cycle illustrated in the previous sections. Now is the time to discuss diagnosis, action plan, action taken, evaluation and learning specification for each of the challenges that emerged (Grant & Ngwenyama, 2003). The twelve challenges that were discovered from the data analysis are discussed in the following sections. Some challenges or problems were related or very similar, and are discussed together. Direct quotations from respondents have been used and the implied meaning, inserted by me, is in square brackets.

### **Problem 1 - lack of knowledge**

Lack of knowledge in this context, refers to lack of experience, lack of expertise, uncertainty, not knowing how WebTrends works, misunderstanding and lack of understanding for extracting value. Most of the respondents explicitly admitted lack of knowledge about some aspects of Web Analytics. Some respondents said that they were not fit enough to answer some questions. Some respondents referred me to another team member for specific information, because those questions may not have been within their area of specialisation.

Some respondents implied lack of knowledge by the kind of response that they gave, because the response may not have addressed adequately the question that was being asked. Other respondents admitted that:

Again, I do not know. I am sorry, I am not fit enough to answer that question.  
Respondent AA7

I don't know it is hard to say. Respondent AA3

### Diagnosis

In this organisation, there was no single person who had inclusive knowledge about Web Analytics, because of its complexity. Respondent AA2 confirmed, while referred to Web Analytics as:

A lot of people know a little bit [about WA]. Respondent AA2

The current practice in the organisation was to undertake tasks but with little rationale for doing them. Some tasks were intended to be done within a team but no one followed through with them. Respondent AA4 stated that:

We are always on the go and presenting stuff and there is very little change.

A majority of respondents admitted to some level of lack of knowledge in some aspects of Web Analytics.

### Action plan

The researcher envisaged developing an illustration to clarify the current scenario of Web Analytics in the context of the organisation. It was necessary to gain support from the business unit to assist in improving the current practice. Respondent AA2 helped in gaining this support from the team.

### Action taken

An illustration to clarify the current scenario of Web Analytics in the context of the organisation was developed. Support was gained from the business unit to assist in improving the current practice, in consultation with the Head of Online and a number of team members who had some Web Analytics understanding. The practical findings were reported and recommendations were reported weekly to the online team, in order to share some insights, as they were being discovered. It took several cycles of investigations and reporting regularly to team, before the recommendations were implemented.

### Evaluation

A simplified model of the broader Web Analytics context was defined and illustrated, especially for SA and the UK, because those were the geographical areas of the virtual teams in the organisation being studied. This model was defined from the perspective of those team members who had some knowledge of Web Analytics.

### Learning

Management found the initial simple contextualised model useful for the online team. Guidelines for Web Analytics adoption and implementation were documented and distributed amongst members of the online team. Some respondents who expressed the need for a framework or guidelines for Web Analytics practice in the organisation were pleased.

A framework or guidelines for Web Analytics adoption and implementation within an organisation should be available before the actual implementation of Web Analytics. It should be contextualised for the particular organisation, based on its Web Analytics requirements. In this way, the team may discuss the framework or the guidelines including the Web Analytics requirements.

All the team members may therefore have a similar level of knowledge about Web Analytics pertaining to their own organisation. Documentation about the framework, guidelines and Web Analytics requirements should be readily available for new team members and for those team members needing to refresh their memory, so that the knowledge in the team is shared. This recommendation was implemented in the organisation of the study.

A knowledge management (KM) strategy may minimise the issue of lack of knowledge. A knowledge management strategy may consist of objectives, approach and plan, budget, benefits analysis, people, process, data and technology assessment, measurement and promoting the strategy. An organisational 'Wiki' that is updated regularly and employees who are given incentives may add value to the knowledge management (KM) strategy. It would seem that Web Analytics in most SMEs would benefit from a KM strategy.

## **Problem 2 - costs**

Costs for Web Analytics adoption and Web Analytics implementation in the context of this study refer to the budget allocation for Web Analytics tools (not limited to Web Analytics packages, these include costs pertaining to Web Analytics as a whole), and budget constraints. These two aspects seem to be contrasting, however they are related. They describe availability of funds and limitations to funds.

Lack of understanding or costs... [are some of the challenges causing the Organisation not to implement Web Analytics]. Respondents AA4

Budget – no one wants to spend money especially now [economic recession period]... Respondent AA3

## **Diagnosis**

In 2008/2009, the organisation in the study was allocated a budget sufficient for the adoption and the implementation of Web Analytics. The budget was designed to cover the costs of resources, the Web Analytics package, Web Analytics benchmarking tools and Web Analytics maintenance in general for about two years.

The contract relating to the commercial Web Analytics package came to an end in August 2009. After a cycle of investigations, it was apparent that there was no budget available for the remainder of 2009 or for 2010, nor was there any budget allocation for the other commercial Web Analytics package. Initially that had not been the situation. There were new cost constraints, that were not there initially which were caused by the global economic recession of 2009 that impacted on both the United Kingdom and South Africa in an obvious way.

### Action plan

The old commercial Web Analytics package had to be decommissioned. An informed process had to be followed to recommend adoption and implementation of a new one. In the interim, a free Web Analytics package was to be adopted and implemented.

### Action taken

The software of the commercial Web Analytics package had been bought by the organisation, therefore it belonged to the organisation. The data had been collected over time by the organisation, therefore it belonged to the organisation. The old commercial Web Analytics package was no longer used as a source of data for weekly reporting. A new, free Web Analytics package was adopted and implemented in-house.

### Evaluation

The online team decommissioned, adopted and implemented the new Web Analytics packages without external assistance. Management was pleased with the availability of the Management Information (MI) report.

### Learning

A continuous learning process was undertaken by the online team to enable them to adopt and implement the free Web Analytics package quickly. Management was pleased by the teams supporting each other to do this using Online Help and Support. Even though some weekly reports were implemented later than others, reports that had been generated using the old commercial Web Analytics package were available for weekly reporting using the new package.

Web Analytics adoption and implementation can be an expensive exercise because of the costs of the commercial packages, the Web Analytics tools and the human resources needed. It does not have to be that way, especially for the Small and Medium Enterprises. There are free Web Analytics packages and Web Analytics tools available now.

The SMEs need to invest in human resources or managed consultations. Having worked with both commercial and free Web Analytics packages, the researcher has observed that some of the free Web Analytics packages have up to 88% of the functional features of the commercial packages. Some experienced analysts from Google Inc. in San Francisco agree with this observation. A seasoned IT Analyst may be able to implement a Web Analytics strategy relatively simply, especially with the online help that is freely available. Some of the free Web Analytics packages include Google Analytics and Yahoo! Analytics. Some of the free Web Analytics tools available online include Crazy Egg, free open source tools such as Piwik and Open Web Analytics, and niche tools such as Mochibot, used to track flash files (Kaushik, 2009). When the free Web Analytics package was implemented, a Web Analytics consulting firm assisted in auditing the implementation. They also answered any questions that analysts had regarding the Web Analytics reports.

A SME may start by adopting and implementing free Web Analytics packages and tools based on their predetermined requirements. A pilot period may be defined to evaluate the Web Analytics solution based on their Web Analytics requirements.

### **Problem 3 - tagging issue**

The tagging issue in the context of this study refers to implementing Java script within the HyperText Mark-up Language (HTML) used to design the Web site. Java script tags within HTML need to be inserted by the developers, the technical support from the Web Analytics vendors so that the Web Analytics tool may start to gather the data from the organisation's Web site.

#### **Diagnosis**

Each time a new Web page was added to the Web site it needed to be tagged before the data about the Web page could be tracked. If the insertion of the Java script took too long or was not be done before some campaigns were initiated, then it was difficult to measure the impact of the campaign.

Sometimes the Java script was inserted at an incorrect position on the Web page. It was confirmed that:

The tagging issue is where we are at the moment and that is our challenge at the moment. Respondent AA1

well I would say we are not getting down to tagging solutions... Conversations about tagging... getting the technical foundation right, including the technical infrastructure which should be driven by business requirements. Respondent AA6

#### Action plan

The tagging issue was identified and this was perceived as a major requirement for selecting a new Web Analytics solution. Different methods of implementing Web Analytics for data gathering were planned and investigated, for example page tagging, log analysis and no tagging together with their advantages and disadvantages. It was decided to use the no tagging solution. This was thought to be preferable, having taken cognisance of the advantages and disadvantages of all three options. Making a decision in the context of the bigger picture was important.

#### Action taken

Now that the decision had been made to adopt a no tagging solution, this was one of the key requirements in the search for a new Web Analytics solution. A thorough analysis and comparison of page tagging, log analysis and no tagging, including advantages and disadvantages of each, was done and reported on.

#### Evaluation

It could have been simpler to just select a Web Analytics solution that required no tagging so that the tagging issue could 'go away'. That decision could have been done at the expense of other Web Analytics implementation options and may have missed the advantages.

The advantages and disadvantages of each Web Analytics implementation option had to be thoroughly investigated. The advantages and disadvantages of page tagging, log analysis and a 'no tagging' option are tabulated below.

| Page Tagging |  |   |
|--------------|--|---|
|              | Advantages   | Disadvantages   |
| 1            | The JavaScript is automatically run every time the page is loaded. Thus there are fewer worries about caching.   | Third party cookies. Cookies are delivered by the analytics site, which makes them third party to the Web site being analysed. Some browsers disable third party cookies, therefore creating inaccurate statistics. |
| 2            | It is easier to add additional information to the JavaScript, which can then be collected by the remote server. For example, information about the visitors' screen sizes, or the price of the goods they purchased, can be added in this way. | Non-page Tracking. It is difficult for page tagging to report on non-pages, such as image file hits, PDFs, media files, downloaded files (ZIP, .EXE, etc.).   |
| 3            | Page tagging can report on events which do not involve a request to the Web server, such as interactions within Flash movies, partial form completion, mouse events, for example, onClick, onMouseOver, onFocus, onBlur etc.                   | Bandwidth and Technical Tracking. Page tagging may not be able to report bandwidth or other technical metrics, like server response time.   |
| 4            | The page tagging service manages the process of assigning cookies to visitors  | Confidentiality - for a hosted solution.  |
| 5            | Accuracy levels - better than log analysis.  | Historical Analysis. Page tagging cannot report statistics prior to the implementation of the page tagging software on the server.  |

Table 4.8.1 Page Tagging



| Log Analysis |  |  |
|--------------|--|--|
|              | Advantages   | Disadvantages  |
| 1            | The log files are already on the server, ready to be analysed.   | Storing management for high traffic sites the log files can be too large, so the storage and management of the Log files in-house needs some investments at the installation time. |
| 2            | Spiders can be tracked using log file analysis, this can be important when you want to optimise your Web site for particular search engines.     | Organisations require experts for log file analysis. They have to hire the experts to handle technical tasks; it's a little complex thing for the non-technical ones.              |
| 3            | The data is on the company's own servers, is in a standard, rather than a proprietary, format.   | Complexity. This method is a little complex in nature, at the beginning, the settings and filtering of unwanted visits are some tedious technical tasks inside this.               |
| 4            | Log files contain information on failed requests   | Limited or no event tracking.  |
| 5            | Historical Analysis. Log analysis software can report as far back as you have log files, which is typically back to the inception of the server. | Proxy / cache inaccuracies.  |

Table 4.8.2 Log Analysis

| No Tagging |   |   |
|------------|---|---|
|            | Advantages  | Disadvantages   |
| 1          | Gather and report network statistics.   | Accuracy levels may be lower compared to other data collection methods.                           |
| 2          | Can passively capture data going between a Web visitor and the Web servers.   | Granularity and segmentation may be lower compared to other data collection methods.              |
| 3          | Can be used to analyse data sent to and from secure systems in order to understand and circumvent security measures, for the purposes of penetration testing or illegal activities. | Additional costs for disk storage for the amount of data collected.                               |
| 4          | Filter suspect content from network traffic.  | Decisions on which inter-field data to collect - for reducing the amount of data to be collected. |
| 5          | Debug client/server communications.   | Focuses more on data collection rather than behavioural analysis and reporting.                   |

Table 4.8.3 No Tagging

## Learning

Even though the tagging issue was one of the problems in this organisation, resolving it necessitated that other requirements and their advantages should be taken into account. Opting for a Web Analytics solution that required no tagging was not simple. Important decisions had to be made about whether the organisation was willing to compromise data accuracy by using the Web Analytics package that required no tagging. Was the organisation willing to settle for the lowest levels of granularity and segmentation as compared to other data gathering methods? Was the organisation willing to have extra budget for disk storage of the plethora of data gathered? Vital questions had to be asked, such as deciding whether the online team would focus on behavioural analysis and reporting or would they focus on data gathering.

It is possible to adopt and implement a combination of Web Analytics packages simultaneously. Based on the Web Analytics requirements and the budget of the organisation, it is possible to run two or more Web Analytics packages in parallel. The difference between the old report and the new report would need to be monitored and reported on, and the differences in their data collection and reporting methods would need to be understood. For the organisation of the study, a combination of Web Analytics packages was selected based on the Web Analytics requirements of the organisation and this solution is planned to be implemented in 2011, if it is still necessary. In the interim, free Web Analytics packages and free Web Analytics tools are being evaluated, while still using the historic data stored in the previous commercial Web Analytics package.

Data collection and reporting methods need to be understood by SMEs before a decision is made whether 'to tag' or 'not to tag'. Advantages and disadvantages of data collection methods need to be evaluated based on the Web Analytics requirements of the organisation. A decision has to be made regarding a suitable data collection method for the company.

#### **Problem 4 - lost data or no data available**

In the context of this study, lost data or no data available means that there was data that was gathered previously which disappeared, or no data was gathered using a Web Analytics tool, because no tagging was done.

##### **Diagnosis**

There was a need to do *ad-hoc* analysis due to changes that were done on the Web site and in order to measuring the impact of launching a new product. There was an instance when data were required from a certain date before the launch of a new campaign to another date after the launch; there were no data available for the two weeks after the launch. Those data were important for tracking the performance of the campaign. Somehow the data had been lost. Another scenario that was pointed out in similar context was that sometimes the new campaigns were not tracked because the java script tag had not been included. One would find that after a certain campaign had been launched and had been running for a while, it became difficult to accurately measure the impact of the campaign, because the data were unavailable when needed. The following was said by some team members:

Lost data is one of our challenges at the moment. Respondent AA1

We would launch a campaign and after the launch we would ask for stats and there are no stats from Web Analytics tool, therefore there would be no stats for measuring the performance of the campaign... Respondent AA3

##### **Action plan**

The log files had to be checked to ascertain whether they were available. The Web Analytics vendor support team was contacted to assist with technical support. Detailed Management Information (MI) requirement documents should be produced early on in the project plan, so that it may be decided what information should be collected and what should not.

### Action taken

Some members of the online team checked whether the log files existed in the Web servers. After verifying the existence of the log files, there was still no data available on the Web Analytics software reports required for the first two weeks in December 2008 and earlier. The support team from the Web Analytics vendor was contacted and a number of Technical Specialist tried to resolve the issue. A number of support phone calls and support e-mails were exchange between the organisation and the Web Analytics vendor support team, but to no avail.

This situation continued for about a month and a half without any resolution. The contract with the Web Analytics vendor eventually expired and the organisation was not motivated to renew the contract after that kind of service. The support team from the Web Analytics vendor never managed to assist the organisation in the study, after numerous attempts to seek technical support.

### Evaluation

Management Information (MI) requirements for each project need to be defined early on in the project plan. This would make it feasible for reports, based on these requirements, to be available, after each project launch.

### Learning

The Web Analytics vendor support team was unable to assist with technical support after about two months of problem root cause analysis. The Management Information (MI) requirements document should have been drawn up at the project conception. However, in this organisation there was a different procedure: any team wanting a report, had to submit a request to the Management Information team, which only then developed the required report. This procedure led to delays; this shows that the required reports should be developed, tested and automated by the Management Information (MI) before the campaign is launched, so that the data is available on the campaign launch date going forward.

The researcher learned that having technical support available with service level agreements (SLAs) and operational level agreements (OLAs) should be stipulated as one of the requirements before the Web Analytics package is bought from the vendor. It is unacceptable situation if that the vendor support team is unable to resolve the issue of lost data that was collected by their Web analytics tool and should have been stored as historic data.

Sometimes a hosted solution is used. This is when data gathered by the Web Analytics package is stored by the vendor. If regular back-up procedures are implemented by the organisation, then an SME may state clearly in their requirements whether or not they want a hosted solution. When organisations archive and store their own data, then they are then responsible for their own back-ups. Web Analytics packages that give clients an option not to have a hosted solution are usually commercial Web Analytics packages. In that case, an organisation should have an agreement about back-up procedures.

### **Problem 5 - improving return on investment (ROI)**

Improving ROI, in this context, means increasing online sales, improving online customer service and improving customer experience online.

#### **Diagnosis**

There had been a significant investment in Web Analytics adoption and implementation. The organisation needed to generate insights that would guide the decision making processes that would help to increase online sales, and especially improve customer service. The business unit decided to increase efforts for improving online customer service. It was confirmed that what was needed in the business unit were the following:

...to support better customer servicing to support digital and business objectives and to help and identify ROI on online projects. It is measurement, I guess. It can also help us identify areas we need to improve on. Respondent AA4

I think we can actually prove the sales that we drive are based on the decisions that we make from the Analytics. Respondent AA6

### Action plan

Regular analysis with insights and recommendations to make decisions that would add value to online customer service was planned. A company that has experience with documenting call centre communication over the telephone was commissioned to assist with strategies for reporting online customer experiences.

### Action taken

Regular analysis was carried out with insights and recommendations for simplifying the online customer experience. Recommendations were implemented. The company that assisted with strategies for reporting online customer experience was commissioned to think about how customer experience had been commissioned. They thought about how they would do that and gave feedback.

### Evaluation

The action that was taken (regular analysis and implementing recommendations) assisted in improving online customer service and online customer experience. Although a number of meetings had been attended with the company who assisted with reporting online customer experience, recommendations had not been formally adhered to. There were various ways to get data pertaining to phone calls that helped to explain the problems with regard to online customer experience; however data had to be extracted and analysed manually (this was time consuming).

### Learning

It was vital to understand and analyse what customers were saying about their experiences online so as to yield insights that would solve the problems raised by customers about their online experiences. It was useful to engage the assistance of companies who had experience in improving online customer experience. This meant that subsequently ROI was improved.

The researcher considers that the challenge to improve ROI prevails in Web Analytics was interpreted because it is not easy to measure the direct impact of changes made (to increase customer service and to increase customer experience online) in monetary terms. Some of the benefits realised were value-based and non-monetary.

A company that is experienced in converting online conversations into monetary terms is useful in monitoring sales figures and online customer experience. Such a company may assist in fully utilising Web Analytics packages and tools, so that ROI may improve.

### **Problem 6 - time and prioritisation**

Time in this context refers to time management issues in using Web Analytics tools available to extract value by individuals within a team. Prioritisation refers scheduling time or lack of it, when necessary to understand how Web Analytics tools relate to each team member's role.

[The problems in Web Analytics are defined like that, because of] Time... Time and focus. I meant the work with the Contact Us – that stuff has been running incorrectly... Looking at the data looking at the trends... Respondent AA4

Well, we do not have time to access the Web Analytics package... Respondent AA6

#### **Diagnosis**

Due to lack of time management and lack of prioritisation of tasks, there was a wealth of neglected data that was neither understood, nor analysed.

#### **Action plan**

Key areas of analysis needed to be identified.

#### **Action taken**

Respondent AA2 assisted with time management and prioritisation and helped the researcher to learn from his expertise. Later on the researcher took over the task of prioritisation of MI reporting.

## Evaluation

An existing change management form was modified so that the stakeholders requesting MI reports could clarify exactly what they needed to be done. The filling in of the form by stakeholders helped with the prioritisation process.

## Learning

The time management and prioritisation skills were learned.

It can be seen that each individual who needs to use the Web Analytics tool, needs to set aside some time to learn how it functions. One way of making time was to automate some routine tasks. The most important report in the business unit was recommended and it required time from the majority of the team members, should be automated as much as possible, so that one person should be responsible for producing it.

The automation process was approved and was started by the MI Manager from the MI team. This automation process made some time available for a majority of team members and prioritisation was easier than before. Time management courses were recommended for individuals in the team who were struggling to prioritise learning how to use Web Analytics packages and tools. It was recommended that individuals who needed to continue to learn about the Web Analytics should schedule at least an hour a day to learn something new about Web Analytics.

## **Problem 7 - agreement on the right solution**

After the requirements have been written and the Web Analytics vendors have been inspected for compliance with these requirements, it is necessary for the team to find agreement on the right solution. However reaching a consensus on the appropriate Web Analytics solution for the organisation is challenging.



## Diagnosis

The previous Web Analytics package needed to be replaced because the contract had come to an end on the 31<sup>st</sup> August 2009. Web Analytics package users were not happy with the technical support from the Web Analytics vendors.

[The challenges are] Time, priority, budget allocation for the package, and agreement on the right WA solution. Respondent AA2

## Action plan

The researcher created an acceptable process to select a Web Analytics solution from more than 100 possible Web Analytics solutions, currently on the market. The process was proposed to, and accepted by the Senior Management of the organisation. The action that needed to be taken was to follow this accepted process.

## Action taken

Key stakeholders within the team came up with a draft of requirements that were reviewed by the researcher so that the selection process could begin.

## Evaluation

The researcher led the process of decommissioning the old Web Analytics solution prior to the adoption and implementation a new Web Analytics solution. The senior management were pleased that a thorough process to select a Web Analytics package. The researcher's efforts in this project added value to the organisation.

## Learning

The team learned that it is feasible to have a combination of Web Analytics packages. They also learned that an interim solution for continuity was possible and we decided to use one with immediate effect after the old Web Analytics solution contract ended. The team discovered that an agreement on the appropriate solution for the organisation took much longer than anticipated.

The researcher examined the causes of this challenge and considers that there should have been fewer people in the meetings to select the new Web Analytics solution. The key stakeholders and the decision-makers should have been the people involved in the meetings. Other team members should have been informally consulted. It was necessary for the researcher to clarify with the team members that were not involved in compiling requirement specifications, why the selected requirements had been chosen. The fact that there were many team members in the selection process meetings surely increased the time taken to discuss all the options, before finally selecting the preferred solution for the organisation. It may have taken longer without the researcher's planned process or the decision made by the team may have been uninformed.

The Senior Change/Business Analyst, the Digital Analyst, the IT Architect and senior management should decide on the appropriate Web Analytics solution for their organisation based on the Web Analytics requirements. They should make their agreement based on how the short-listed vendors proposed to address the predetermined Web Analytics requirements.

### **Problem 8 - complex solution (the solution is not easy)**

The entire Web Analytics strategy is very difficult to adopt and implement properly according to the requirements that are specific to the organisation.

#### **Diagnosis**

The Web Analytics challenge was found to be complex and therefore the solution was not easy. This was partly because Web Analytics was in its infancy in this organisation and there were few employees with the appropriate expertise in the organisation. The first time Web Analytics had been adopted and implemented in 2008.

Web Analytics is not an easy format at the moment. Respondent AA1

It [Web Analytics] is not put in the fore-front of anyone's mind. The solution is not easy. Respondent AA2

### Action plan

The researcher drew diagrams and gave examples, wherever possible, to illustrate the status of Web Analytics in the organisation. Ways were suggested to continually simplify the practice of Web Analytics in this particular organisation. The first simplification was of the technical terminology, so that the business people could understand, especially those aspects that needed their decision-making. Diagrams and examples were used to simplify issues pertaining to Web Analytics. An executive summary with key points was included in reports for senior management.

### Action taken

Simplified terminology was used, including an executive summary of reports to senior management which was useful. The use of diagrams and examples clarified some Web Analytics aspects for those who did not understand.

### Evaluation

Getting straight to the point in reporting was essential. Simplified terminology on forms and in MI reporting was used, including diagrams and examples where possible.

### Learning

The simplified terminology was appreciated by the Web Analytics stakeholders. The use of diagrams and examples had a positive impact on the understanding and simplification of some Web Analytics concepts to the team.

The researcher interprets this challenge as the need to bring awareness to the organisation that it is vital to have a key person responsible, not only for Web Analytics but also the digital strategy pertaining to Web Analytics. This person may be an expert already or may be in the process of being trained as an expert. The researcher recommended that the key responsible person for Web Analytics should be responsible for simplifying Web Analytics concepts for the team. That person should be able to simplify and clarify the concepts for the Web Analytics stakeholders by means of diagrams and by giving examples related to the business. The key responsible person should also be able to draw up simplified reports that are specific to the requestor's business needs and background.

It was learned that it is very helpful for all stakeholders to simplify and clarify Web Analytics concepts by means of diagrams and by giving examples related to the business. It was suggested that a key responsible person should draw up simplified reports that are specific to the requestor's business needs.

### **Problem 9 - translating raw data into understandable information**

Analysing data means, translating raw data into understandable information. It also means coming up with insights and recommendations to assist the business to make sound decisions about the digital strategy of the organisation.

I do not know... Just to be able to take raw data and present it in a way that is understandable by an average person... To be able to draw on stats whenever we want in an easy understanding and in an easy way... Just as information is read, it should be understandable... Respondent AA3

We should get interpretive meaning instead of just stats... having the right people who know, and looking intelligently at the information that we are getting... Respondent AA5

#### **Diagnosis**

It was found that it is time-consuming to translate raw data into understandable information. There was also no dedicated person to analyse the data.

#### **Action plan**

A dedicated person was assigned the responsibility of translating raw data into understandable information by providing *ad-hoc* analysis and periodic analysis. Scheduled weekly reports with commentary and monthly reports were a business requirement.

#### **Action taken**

Various teams and various members of the online team had an input in collating the weekly report. There was a dedicated team member responsible for collating the crucial weekly report to be reviewed by the Management Committee.

### Evaluation

Weekly reports with commentary were collated and distributed. These weekly reports were presented in a weekly Steering Committee meeting and in a weekly Management Committee meeting. This was the most important report that the online team produced and many critical decisions were made, based on the quantitative and qualitative metrics that this report presented. This report also had predefined benchmarks that were periodically reviewed.

### Learning

Insights and recommendations were produced at least weekly and monthly. There was still more room for improvement in this area, although there had been measurable progress compared with where the team started.

The challenge for the researcher was looking at the statistics from the report, and finding out why the statistics were actually the way they were, for the reported time frame. The reasons and the qualitative analysis behind the statistics were crucial for understanding and for making decisions.

Quantitative data should be analysed qualitatively. Relationships should be built with business units that can provide qualitative analysis of the statistics.

### **Problem 10 - complying with existing, different systems (dependent on other systems)**

The dependency of the new system on the old systems, which may not necessarily be compatible, was problematic in this study environment.

### Diagnosis

The holding company existed first and gave rise to the new company, Analytix Trailblazer Inc. The holding company had its own systems first and the new company had to align with the existing systems without being consulted or having options in that regard.

Trying to work with systems that <<name of holding company>>, our Holding company has... [is a challenge] Respondent AA3

There are a lot of different people and a lot of difference systems. Respondent AA5

I would say the big demand is getting access to the systems – it would be in the whole set up as well... sometimes we have to involve <<name of holding company>> Respondent AA6

### Action plan

It was important to understand the different online systems that at least exist and communicate the findings to the team.

### Action taken

The basic online schema and data warehouse was learned. Some online systems at Analytix Trailblazer Inc. were inspected. There was no practical action taken with regard to this problem, because it was beyond the scope of the study.

### Evaluation

This problem was complicated and had existed for a while at Analytix Trailblazer Inc. This was not a business priority and it would be extremely time-consuming and costly to do even an impact assessment of this problem.

### Learning

Striving for a hands-on resolution in this problem was out of the scope of the online team. This problem should be referred to senior management to address.

As the researcher was striving to interpret this challenge, it was realised that the team members had already given up attempting to resolve the issue of having incompatible systems. It had been persistent problem since the launch of Analytics Trailblazer Inc. There had been attempts to make suggestions for the resolution of this challenge to the relevant senior managers, but there had been no change. The decision-makers had not prioritised this challenge in the past and they continued not to prioritise it.

Organisations should be aware of different systems that depend on each other and that may have an impact on the functionality of the Web Analytics packages and tools. Senior management and systems experts should ensure that different systems that exist are compatible with each other.

### **Problem 11 - many manual processes**

There exist ways of doing tasks that are lengthy and laborious. Sometimes these practices are prone to errors and human mistakes.

#### Diagnosis

There were careless mistakes that were identified from a few reports, because of the tight deadlines and the lack of adequate time to do quality checks. This was due to the fact that many reports required lengthy manual processes to be produced.

There are a lot of manual processes. Respondent AA5

#### Action plan

A request was submitted to the MI team to automate the most critical weekly report which takes the longest time to produce.

#### Action taken

The MI team automated many, stand-alone reports from a single system, and these were amalgamated into a single report. It takes a long time to run each report; so by gathering the single reports and running them together, time was saved.

#### Evaluation

Those systems that the MI team did not have access to and that were different, were not automated.

#### Learning

A majority of the sections of the weekly report were automated so that the report did not take as long to run as it had done. This enabled the team to have some time for analysis and to offer recommendations.

The researcher's realisation, with regard to the many manual processes that existed, was that there was no one accountable to ensure that the automation of reports was followed through. One team member pointed out the challenge of many manual processes and other team members did not even have time to consider the manual processes that were going on around them. It seemed that those who carried out manual processes were so used to them that they did not even think of ways to change the situation, even if it would save them time.

Manual processes and crucial reports should be automated as much as is feasible.

### **Problem 12 - plethora of reports or no reports**

#### Diagnosis

The unmonitored ad-hoc reports including the scheduled periodic reports grew in number. At the same time there were complaints that there were no reports available from the online team.

The challenge was getting the data right and the tagging right... The daily report, the hourly report... There are just too many reports – it is hard to find the report that you really want... Respondent AA6

I need to be provided with reporting. I have not seen anything tangible since I started. I do not know. I am not close to the technical detail to understand. For me it is just I am not getting reporting. Respondent AA7

#### Action plan

The scheduled reports were intended to be limited to two reports, one weekly and one monthly. Even though other stakeholders requested more scheduled reports, each request had to be evaluated as to whether it was both necessary and feasible. The plethora of requests for ad-hoc reports had to be managed by asking the team to fill in a change request form and to justify the importance of the request and also to ensure that the request was not ambiguous.



### Action taken

The scheduled reports were actually limited to two reports, one weekly and one monthly. A change request form was disseminated to the potential MI requestors so that they could use it when they requested reports and could justify why it was important to produce the requested report.

### Evaluation

Sometimes other Web Analytics stakeholders requested time-consuming, scheduled reports just because there was a dedicated resource for assisting with the MI reporting. Sometimes the requests were unreasonable, detailed and redundant. Therefore the change request form that was used dealt with the issues I have mentioned.

### Learning

The scheduled periodic reports were distributed to relevant stakeholders. There was one weekly report and one monthly report from the online team. The complaint about the unavailability of reports had to be managed and it had to be dealt with directly with each Web Analytics stakeholder making that claim. The expectations of the MI requestors had to be managed properly.

It was interesting to note that the same team of stakeholders had contrasting views regarding the availability and unavailability of reports. There were also contrasting views with regard to accessibility and inaccessibility of the MI reports.

The researcher suggested a process where each person could request the reports that they need from a Digital Analyst and then there would be a sign-off, so that each person could have the necessary reports.

According to the interview respondents, twelve challenges were perceived to be real problems that were experienced by Analytix Trailblazer Inc. These are: lack of knowledge, costs, tagging issues, lost data/no data available, improvement of ROI, time and prioritisation, agreement on the right solution, complexity of solutions, translating raw data into understandable information, complying with existing/different systems, a lot of manual processes and a plethora of reports or no reports.

Grounded action research intervened in the challenges and there was measurable progress made in minimising, and in some cases, eradicating the challenges. Based on the information above, the challenges are classified into three types namely: adoption challenges, implementation challenges and benefits realisation. These are shown in the following table below, Table 4.8.4.

| <b>Adoption challenges</b>      | <b>Implementation challenges</b>          | <b>Benefits realisation challenges (post-implementation)</b> |
|---------------------------------|---|--|
| lack of knowledge               | lack of knowledge                         | plethora of reports or no reports                            |
| Cost                            | tagging issue                             | many manual processes  |
| improving return on investment  | lost data or no data available            | translating raw data into understandable information         |
| agreement on the right solution | time and prioritisation                   |  |
|                                 | complex solution                          |  |
|                                 | complying with existing/different systems |  |

Table 4.8.4 Challenges classified

#### 4.9 A discussion of guidelines for minimising WA problems

Having analysed the problems pertaining to Web Analytics, there can be ways to eradicate or minimise these problems. Below, is an analysis based on the work of Kalakota and Robinson (1999) about reducing problems by implementing an overall strategy. Following this some guidelines to eradicate or minimise Web Analytics problems are highlighted.

##### ***Ten ways to succeed at turning strategy into action (Kalakota & Robinson, 1999)***

1. Designing the WA model or framework (blueprint) with your team and with other representatives from other departments – include relevant stakeholders in the organisation.

In the case organisation, a Web Analytics model was designed based on the feedback from the online team and with other relevant Web Analytics stakeholders in the organisation. The Web Analytics model was developed from grounded action research results and observations conducted in the organisation.

2. Do investigations or auditing. Even though you feel that you already know the problems in the organisation, do not jump immediately to a solution.

A set of informal interview questions was compiled. Web Analytics stakeholders were asked to articulate what problems they perceived existed in the organisation pertaining to Web Analytics. Five grounded action research iterations were done before recommendations were suggested.

3. Look at other organisations' best practices.

An 'other-settings' generalisation was done to learn from another organisation that has adopted and implemented Web Analytics' critical success factors.

4. Assemble a task force, meet regularly and include senior management every step of the way. Then present to management your solutions.

The researcher was responsible for assembling the online team and involving senior management in the design of the Web Analytics model.

5. Seek outside help.

An online marketing company that is Google Analytics certified from Cape Town assisted the case organisation and the researcher with some Google Analytics enquiries.

6. When other managers have questions, listen to constructive criticism including objections, especially valid ones.

Managers who had constructive criticism directed concerns to the researcher who listened to them. In response a form was compiled for submitting enquiries, requests and any other Web Analytics requirements so that the objectives of each requirement, could be understood by the researcher, who then addressed each concern was addressed appropriately.

#### 7. Communicate regularly.

The researcher compiled a weekly report with commentary on the status of management information. The weekly report was presented by the researcher in a weekly meeting with the online team and senior manager, face-to-face and via video conferencing.

#### 8. Make sure that the Web Analytics model is simple and is a few pages. Make use of diagrams to illustrate some points.

A diagram was used to illustrate the Web Analytics process model with its domain model. During five iterations and feedback from various Web Analytics experts the model was simplified.

#### 9. Include project management and a responsible Project Manager because WA adoption and implementation will not happen automatically.

The researcher worked with a Project Manager and an Online Manager to ensure that there was a project management plan for each of the Web Analytics projects.

#### 10. Take small steps to execute. Run the old set of Web Analytics tool parallel with the new set of Web Analytics tools. Then after a thorough analysis and satisfactory results, turn off the old set of Web Analytics tools and completely switch the organisation over to the new way of doing things.

A thorough analysis was conducted by the researcher to illustrate the reporting styles of WebTrends and Google Analytics. The analysis highlighted the similarities and the differences in the reporting approaches. WebTrends and Google Analytics were running in parallel for two months before WebTrends was turned off. A phased approach was taken during the switch over to Google Analytics.

Kalakota & Robinson's (1999) recommendations, can be evaluated against the Web Analytics strategy for the organisation in the study. The Web Analytics model was designed in consultation with the online team and other representatives with other departments. More investigations were done from the online team and representatives from other departments. Other organisation's best practices were looked at using the Hitwise benchmarking tool. An online marketing company that was the certified Google Analytics Company assisted the team with interim solutions and our online reports. Senior management was involved in each phase of the Web Analytics solution. Communication with regards to progress was sent out weekly or addressed in the weekly meetings. The Web Analytics model was simplified and was illustrated using a diagram. A Project Manager was included in the adoption and implementation of the Web Analytics solution. A phased approach with thorough analysis was chosen for implementation. After following Kalakota and Robinson's (1999) suggestions, the researcher formulated twelve guidelines for eradicating and or minimising Web Analytics problems, especially suited to a small medium enterprise.

***Twelve guidelines for adopting and implementing Web Analytics in an e-commerce organisation or a small medium enterprise (SME)***

1. A knowledge management (KM) strategy may minimise the issue of lack of knowledge. A knowledge management strategy may consist of objectives, approach and plan, budget, benefits analysis, people, process, data and technology assessment, measurement and promoting the strategy. An organisational 'Wiki' that is updated regularly and employees who are given incentives may add value to the knowledge management (KM) strategy. A SME would benefit from a knowledge management (KM) strategy.

Knowledge Management is referred to as a class of information systems applied to managing organisational knowledge (Alavi & Leidner, 2001; Smuts, Looock, Van der Merwe & Kotzé, 2009). As more expertise is being gained within the team, it is important to implement a knowledge management system in the environment, making use of people's knowledge using technologies such as a 'Wiki'.

2. A SME may start by adopting and implementing free Web Analytics packages and tools based on their predetermined requirements. A pilot period may be defined to evaluate the Web Analytics solution based on their Web Analytics requirements.

Kalakota & Robinson (1998) suggest taking small steps during this execution. After a thorough analysis and satisfactory results, the organisation can switch over completely to the new way of doing things. If there was an old Web Analytics tool, a decision needs to be made about how long to run it in parallel before switching it off.

3. Data collection and reporting methods need to be understood by SMEs before a decision is made whether 'to tag' or 'not to tag'. Advantages and disadvantages of different data collection methods need to be evaluated based on the organisation's Web Analytics requirements. Thus an informed decision can be made a suitable data collection method for the company.

In Web Analytics we have to place a very high level of importance on the value of data collection (Kaushik, 2007). Rather than starting to look for the best Web Analytics implementation with a request for proposal, or from a selection of recommended vendors, it is advisable to spend some time studying the complexities and nuances of data collection (types, options, methodologies) and let the data collection choices drive the choice of vendor, platform, and everything else that goes with it (Kaushik, 2007).

4. A hosted solution is when data gathered by the Web Analytics package is stored by the vendor. Web Analytics packages that give clients an option not to have a hosted solution are usually commercial Web Analytics packages.

When an organisation archives and stores their own data, they are then responsible for their own back-ups. In that case, an organisation should have an agreement about back-up procedures.

Hosted solutions may seem to make financial sense in the interim (Sostre & LeClaire, 2007). When an organisation gets a hosted solution, costly server administrator's time is the vendor's responsibility. In the long run, there are high costs related with the long-term commitment associated with hosted providers (Sostre & LeClaire, 2007). It is advisable to learn how to add Web Analytics code to a company's Web site so that hosted solutions may be avoided. If an organisation requires a high level of privacy and control, it is advisable to avoid hosted solutions (Sostre & LeClaire, 2007).

5. Consulting a company that is experienced in measuring online conversations in monetary terms is useful in monitoring sales figures and online customer experience. Such a company may assist in fully utilising Web Analytics packages and tools, so that return on investment (ROI) may improve.

According to Sostre and LeClaire (2007), the results of marketing efforts should appear as increased profits — in other words, as an improved bottom line with return on investment (ROI). A company is more likely to achieve this goal if they make Web Analytics strategy part of a process of continuous quality improvement (Sostre & LeClaire, 2007).

6. Time management courses are recommended for individuals in the team who are struggling to prioritise learning how to use Web Analytics packages and tools. It is recommended that individuals who need to continue to learn about Web Analytics should schedule at least an hour a day to learn something new.

In his book "Web Analytics: An Hour a Day", Kaushik (2007) encourages people involved in Web Analytics to spend at least an hour a day to learn more about Web Analytics and aspects pertaining to their roles. He further recommends <http://www.webanalyticshour.com/> and his Web Analytics blog: <http://www.kaushik.net/avinash/> to learn current topics in Web Analytics.

7. The Senior Change/Business Analyst, the Digital Analyst, the IT Architect and senior management should decide on the appropriate Web Analytics solution for their organisation based on the Web Analytics requirements. They can make their agreement based on how the short-listed vendors proposed to address the predetermined Web Analytics requirements.

It is important to ask the Online Business Analyst/Digital Analyst or Developer which Web Analytics packages are available for the type of Web site a company has. If a company has a large Web site or need real-time data, it can investigate one of the Web Analytics packages in Appendix A, and inspect which one should work well for the its Web site (Sostre & LeClaire, 2007; Kaushik, 2009). The company team can then review short-listed vendors to select the best fit for the company's Web Analytics requirements.

8. It is important to simplify Web Analytics concepts by means of diagrams and by giving examples related to the business in order to clarify them. A key responsible person can draw up simplified reports that are specific to the requestor's business needs.

Visual displays can guide viewers' eyes quickly to significant information, reducing the time required to gain insight (Eckerson, 2011). In addition visual reporting technology has become interactive, making visualisation an important analytical tool. Visualisation reporting can transform a Business Intelligence (BI) solution (Eckerson, 2011).

9. Quantitative data can be analysed qualitatively. Relationships can be built between business units that can provide qualitative analysis to supplement the statistics.



It is important to report on integrated qualitative and quantitative Web Analytics data for multiple social media services (Kaushik, 2007; Sostre & LeClaire, 2007). Sostre and LeClaire (2007) further state that it is important to use monitoring tools to review qualitative data from social media, such as

- The degree of customer engagement
- The nature of customer dialogue, sometimes called *sentiment*
- Your brand reputation on a social network
- The quality of relationships with your target market
- The extent of participation in online conversations
- Positioning in your industry versus your competitors

10. Organisations can be aware of different systems that depend on each other and that may have an impact on the functionality of the Web Analytics packages and tools. Senior management and systems experts should ensure that different systems that exist are compatible with each other.

Kaushik (2009) highlights Web Analytics tools that may run in parallel to obtain data from multiple sources. These Web Analytics tools include a Web Analytics software package from a vendor (such as Unica, WebTrends and Google Analytics), a Web Analytics benchmarking tool from a supplier (such as HitWise), an experimentation and testing tool (such as Ominiture's Test&Target, Autonomy's Optimost, Google's Web site Optimizer and SiteSpect).

11. To make the most of Web Analytics human resources, manual processes and crucial reports can be automated as much as it is feasible.

Automation boosts productivity (Marketo Incorporated, 2010). Fewer people would be necessary to do the work when manual processes are automated and yet they would deliver quality reports (Marketo Incorporated, 2010). The response time to produce automated reports would be shorter (Marketo Incorporated, 2010).

12. It can be helpful to implement a process where each person requests the reports that they need from a Digital Analyst using a formal application form. Using such a system enables prioritisation and a sign-off step, ensuring that each person has the necessary reports within a negotiated time-frame.

Web Analytics should be managed by the business function, preferably the function that owns the Web strategy (Kaushik, 2009). Web Analysts need to think, imagine, and move at the pace of the business (Kaushik, 2007; Kaushik, 2009). The measurement of success needs to be closely aligned with the people in an organisation who define success and set strategies to achieve it (Kaushik, 2009).

The twelve guidelines above may be used by large organisations or SMEs that are considering adopting and implementing Web Analytics. They may be used in conjunction with Kalakota and Robinson's (1999) recommendations or in isolation. The models and the guidelines address the gaps in the previous Web Analytics frameworks discussed above, by starting with cross-functional management by senior management, by including the importance of investing in the knowledge of the Web Analytics stakeholders and by mapping out the suggested process of adopting and implementing Web Analytics. The guidelines bring awareness of key challenges in Web Analytics adoption and implementation. The guidelines further recommend ways to prevent or at least minimise potential challenges.

#### **4.10 Collapsed categories for the study, after the fourth iteration**

The constant comparative method, as defined by Ngwenyama (2009b) is that

it facilitates the generation of complex theories of process, sequence, and change pertaining to organisations, positions, and social interactions [that] correspond closely to the data since the constant comparison forces the analyst to consider much diversity in the data.

At this stage more analysis was carried out using the method of constant comparison. The nineteen categories had to be collapsed between five and nine core categories. In the figure below, Ngwenyama (2009b) illustrates instances of data, labelled I1 to I9 that are grouped according to similarities to form new concepts.

In this study the process of collapsing categories from nineteen to seven happened intuitively. After the third iteration, the seven categories were Programme Change Management, Management Information, Knowledge Management, Web Analytics, Customer Experience, Problems and Innovation. These collapsed categories were used to propose a new model for adopting and implementing Web Analytics in an e-commerce environment. These terms are those used by the respondents.

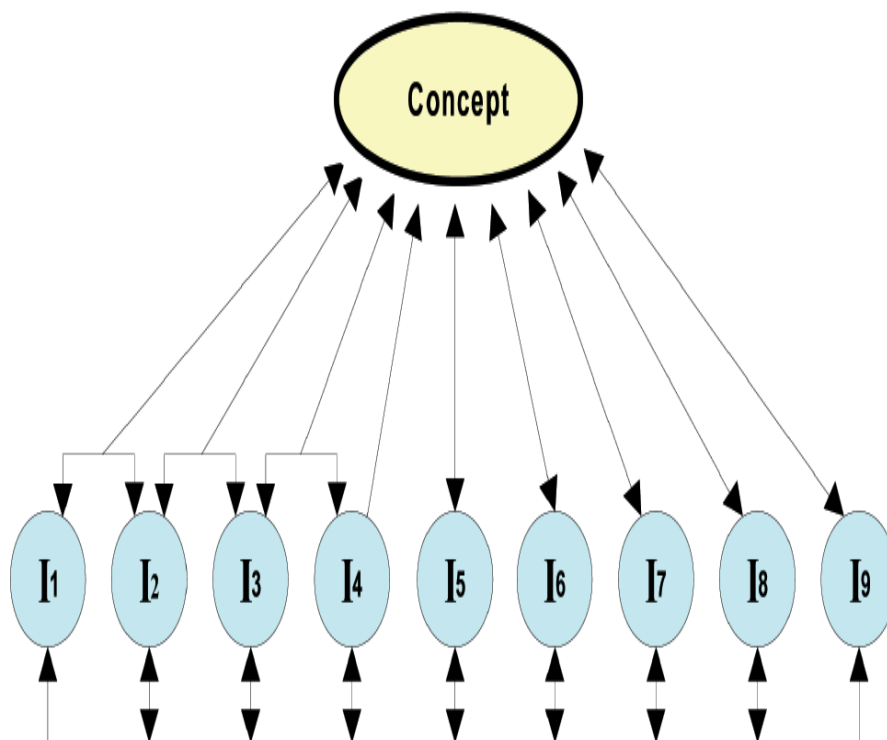


Figure 4.11 Concept formed from instances of data or empirical observation (Ngwenyama, 2009b)

| Categories after the third iteration | Categories   |
|--------------------------------------|--|
| PROGRAMME CHANGE MANAGEMENT (PCM)    | Strategy, Resources, Decision Support System (DSS), Revenue, and Change Management |
| MANAGEMENT INFORMATION (MI)          | MI Reports, Quantitative metrics, Qualitative metrics, and Quality Assurance       |
| KNOWLEDGE MANAGEMENT (KM)            | Knowledge and Facilitating conditions  |
| WEB ANALYTICS (WA)                   | WA adoption, WA implementation, and WA benefits                                    |
| CUSTOMER EXPERIENCE                  | Services rendered, and Customer journey (inclusive of e-commerce transactions)     |
| PROBLEMS                             | Twelve problems discussed below  |
| INNOVATION                           | Innovation   |

Table 4.10a Collapsed categories for Web Analytics adoption and implementation in an e-commerce context, after the third iteration

| Categories after the fourth iteration      | Categories   |
|--|--|
| PROGRAMME CHANGE MANAGEMENT (PCM)          | Strategy, Resources, Decision Support System (DSS), Revenue, and Change Management |
| MANAGEMENT INFORMATION (MI)                | MI Reports, Quantitative metrics, Qualitative metrics, and Quality Assurance       |
| KNOWLEDGE MANAGEMENT (KM)                  | Knowledge and Facilitating conditions  |
| WEB ANALYTICS (WA)                         | WA adoption, WA implementation, and WA benefits                                    |
| CUSTOMER EXPERIENCE                        | Services rendered, and Customer journey (inclusive of e-commerce transactions)     |
| INTERNAL & EXTERNAL BUSINESS RELATIONSHIPS | Business units, suppliers, vendors, networks                                       |
| INNOVATION                                 | Innovation   |

Table 4.11b Collapsed categories for Web Analytics adoption and implementation in an e-commerce context, after the fourth iteration

#### 4.10.1 Programme Change Management

Programme change management involves strategy, resources, decision support systems (DSS), revenue, and change management. It is a process during which the changes of a system are implemented in a controlled manner by following a pre-defined model with, to some extent, reasonable modifications while managing several related projects, often with the intention of improving an organisation's performance. The respondents dealing with this process belong to a multi disciplinary team, and describe the programme as cross functional.

In the context of this research, the category 'Resources' implies not only human resources, such as employees, but also process resources, such as infrastructure. Natural resources, which are generally the third component of resources, are not relevant for the purposes of this study. After cyclical analysis, the 'People' category was a sub-category under the main category Resources (human). Respondent AA2 believed that there should be one owner of the organisation's Web Analytics solution. This person should be the gatekeeper and also be an expert in Web Analytics. This owner needs to make sure that MI reports are a part of decision-making. Management needs to appreciate the value of the Web analyst and have resources under that person for about two years after their appointment. Responded AA2 reiterated that Web Analytics stakeholders need to know that Web Analytics is making their jobs easier and that there is responsible person with a key role.

The owner of Web Analytics is able to channel Web Analytics activities and MI requirements. He also believed that the online team, especially the Digital Analyst (the term used interchangeably with Web Analyst), should establish relationships with key stakeholders. Other respondents answered with uncertainty the questions about who the key Web Analytics stakeholders were and what their roles were, that:

Well I think from a consumption point of view, it is the Online Business... It is the Marketing team for Online Marketing. On the South African operations, it is the Member Servicing team. Respondent AA4

I do not know really know their roles... Respondent AA5

A dedicated WA expert and that person should have an understanding of the business as well. Respondent BB1

| Category after second iteration | Initial Categories   | Derived from Open Coding (after a number of iterations)   |
|---------------------------------|--|---|
| Resources                       | <b>Human Resources</b><br>People<br>Person<br>WA team<br>Function<br>Work<br>Position<br>Relationships<br><b>Process Resources</b><br>Infrastructure | Job description<br>Position in business unit<br>Working across business units<br>Collaboration (departments)<br>Team (within business unit)<br>Various roles<br>Flexibility within a role<br>Implementation Engineer<br><i>Lack of ownership of marketing role</i><br><i>Defining roles of Marketing team members</i><br>Technical foundation |

Table 4.11.1.2 Resources category evolution

Respondent AA1 felt that the direct to customer (D2C) team needed to have a sales focus. The customer management team (CMT) should be focusing on cost savings. The CMT should also embark on campaigns to increase the number of e-mail addresses, this means that they should be engaging people in the customer zone and directing people to the customer zone. The online team should know how many people log in to the different zones; they should be increasing repeat visitors and making lives easier for people who use the site.

Respondent AA1 felt that the people directly involved in Web Analytics should be decreasing costs by communicating digitally. She also felt that they should improve the quality of communication within the team and with customers. Other interviewees said the following:

The Online team is responsible for conversion and cost savings. Analytics is more involved in the overall view of the Web site. The Marketing team would be responsible to measure (what's the word) is it marketing consumption and conversion. That means, how effective is the conversion after the person has seen the advert (sales conversion), channel usage of the Web site. How is the Web site affecting the business from the revenue and cost savings? Respondent AA6 and Respondent AA7 are going to maximise their budget to ensure the effectiveness of marketing consumption and sales conversion. Respondent AA4

They must give us stats that should be their role. It is not just WebTrends, there are other systems as well to report from. Respondent AA5

A significant amount of money goes to development of the Web site and trying to get Web traffic... Respondent BB3

Initial themes and categories in this section included position in a business unit, departmental role, expertise, clarifying people's roles, various roles and teams. After the second iteration, more analysis was done and this same coding gave rise to the central category Resources. The links that were formed were account, teach, work and collaborate.

A decision Support System (DSS) is a complex group of information systems that is designed to help a business unit make sound decisions. It is a class of information systems, not limited to digital systems that assist business and organisational decision-making activities. DSS forms part of Business Intelligence (BI).

I do not think it [Web Analytics] should be implemented in isolation. I think it is more experience analytics and interactive analytics, not WA. WA should be falling under a bigger scheme on Business Intelligence. Respondent AA4

I think Analytics is just one of the tools. It should form part of reputation management. You have to use it with Twitter and other systems to get the reputation of the company. Yes, Analytics is not a standalone, you use it with AdWords as well.

Respondent BB4

| Category after second iteration | Initial Categories   | Derived from Open Coding (after a number of iterations)  |
|---------------------------------|--|--|
| Decision Support System (DSS)   | Decision Support System (DSS)<br>Decision-making<br>Business Intelligence (BI)<br>DSS Complexity | Decisions<br>WA should inform decisions<br>WA should inform better ways<br>Decisions from many sources<br>Web insights<br>WA should be a component of BI |

Table 4.11.1.3 Decision Support System category evolution

In this research environment, revenue is budget, cost-savings, money made from sales, savings and return on investment (ROI).

| Category after second iteration | Initial Categories   | Derived from Open Coding (after a number of iterations)                   |
|---------------------------------|--|---|
| Revenue                         | Budget<br>Cost-savings<br>Sales<br>Savings<br>Return On Investment (ROI) | Save costs using digital communication<br>Cost savings<br>Online projects |

Table 4.11.1.4 Revenue category evolution

Change Management in this study refers to current and desired practice in the organisation together with actionable steps to implement changes. This definition encompasses advancement, maintenance of practices, current trends and trend-setting.

| Category after second iteration | Initial Categories   | Derived from Open Coding (after a number of iterations)   |
|---------------------------------|--|---|
| Change Management               | Change<br>Advancement<br>Maintenance<br>Trends<br>Practice | Improvement<br>Desired practice (no tagging)<br>Interventions to change the situation<br>Erroneous practice<br>Perceived best practice<br><b>Increase</b> conversion rate (CR)<br>Social media (Web 2.0)<br>Trends analysis<br>Continuous maintenance |

Table 4.11.1.5 Change Management category evolution

The 'Practice' category became a sub-category under the main category 'Change Management' after a number of analysis iterations. Interviewed online team members admitted that they did not know much about Web Analytics adoption and implementation.

Respondent AA2 even gave the same definition when he was asked about the meaning of each concept. He confirmed that

...in the past no one has owned it [Web Analytics] and it was never implemented properly in their organisation. Currently the practice is still an after-thought and it is *ad-hoc*.

Web analytics adoption and implementation was done years ago. Respondent BB4

The Practice sub-category consisted of the following themes: desired practice (no tagging), interventions to change the situation, erroneous practice, and perceived best practice, before it formed part of the 'Change Management' main category.



| Category after second iteration | Initial Categories  | Derived from Open Coding (after a number of iterations)  |
|---------------------------------|---|--|
| Strategy                        | Planning<br>Objectives<br>Search Engine Optimization (SEO)<br>Search Engine Marketing (SEM)<br>Key Performance Indicators (KPI)<br>Framework<br>WA Framework<br>Success | Vision<br>Digital strategy<br><u><b>Align</b></u> to digital strategy<br>Conversion rate (CR)<br><u><b>Calculate</b></u> CR<br>Demands of WA<br><u><b>Celebrate</b></u> success<br><u><b>Define</b></u> success<br><u><b>Measure</b></u> success (campaigns)<br><i>Lack of ownership of marketing role</i> |

Table 4.11.1.1 Strategy category evolution

Strategy in this context refers to the overall business strategy including the online team's digital strategy. Strategy also entails planning, setting objectives for the business unit, search engine optimisation (SEO), search engine marketing (SEM), defining key performance indicators (KPIs) for the online environment, defining a Web Analytics framework, defining success, measuring success and celebrating success.

I set strategy and digital vision team and we are the channel between ops (operations), marketing and the rest of the organisation. Respondent AA2

Well the whole business is the direct channel. We need to understand how people are interacting with the Web site – where are people dropping off... KPIs. I would say that most of the traffic that is going on the site, where are we getting people from, where are they dropping out, what are they doing so that we can do SEO optimisation. Respondent AA6

Web Analytics could show them which pages are working and what keyword people are searching for. Respondent BB4

...information must be specific, for advertising, for marketing so that we may be able to make informed decisions to modify strategy and improve our business strategy. Respondent BB1

#### 4.10.2 Management Information

The core category Management Information (MI) has four main categories, namely, Management Information (MI) reports, qualitative metrics, qualitative assurance and quantitative metrics. For the purposes of this study, Management Information (MI) Reports mean an integrated report with agreed upon metrics.

There are various types of Management Information (MI) Reports, such as scheduled Management Information (MI) Reports and ad-hoc Management Information (MI) Reports. Another respondent claimed that Web Analytics success lies in regular reporting in the following quote:

Regular reporting [would define the success of Web Analytics] to me. Respondent AA7

| Category after second iteration  | Initial Categories   | Derived from Open Coding (after a number of iterations)  |
|--|--|--|
| MI Reports<br>Qualitative metrics<br>Quality Assurance<br>Quantitative metrics | MI Reports (Integrated Reporting)<br>Qualitative metrics<br>Qualitative measure<br>Quality Assurance<br>Trust<br>Credibility<br>Benchmark<br>Benchmarking<br>Redundancy<br>Quantitative metrics<br>Quantitative measures | Online Steering Committee Meeting Report<br>Scheduled MI reports<br>Various ad-hoc MI reports<br>Interactive reports<br>Collaborative reporting /<br>Consolidated report<br><b>Translate</b> raw data into understandable information<br>Plethora of reports<br>No reports<br>Customer experience online<br>Customer behaviour online<br>Quality communication<br>Reliable statistics<br>Quality scores<br>Avoid duplicating data<br>Statistics<br>Sales figures |

Table 4.11.2 Management Information categories

In this context, qualitative metrics refers to customer experience online and customer behaviour online.

Quality Assurance, in this study refers to standardisation, benchmarking objectives, credibility, trustworthy data and minimising or eliminating redundancy.

Quantitative metrics in this context refer to statistics such as sales figures.

#### **4.10.3 Knowledge Management**

Knowledge Management in this research environment includes knowledge and facilitating conditions.

Facilitating conditions refer to an environment of support, training, knowledge-sharing, coaching and mentorship, in the context of this study. The respondents expressed the importance of knowledge management.

We need to send more people on a training course and teach people how to use it [Web Analytics]... Respondent AA6

It just needs to be part and parcel of what people do. People, I mean, people need to know what it is and what the capabilities are. People need to be trained so that it is part and parcel of what we do. Respondent AA7

People need to be schooled in what it [Web Analytics] is. Respondent BB4

You would need a training session of how to set up goals and make time to analyse and make decisions of how we are going to use the dynamics of WA... Respondent BB3

| Category after second iteration      | Initial Categories  | Derived from Open Coding (after a number of iterations)   |
|--------------------------------------|---|---|
| Facilitating Conditions<br>Knowledge | Support<br>Training<br>Experience<br>Expertise<br>Understanding | People's buy in<br>Technical support<br>WebTrends (WT)<br>Google Analytics (GA)<br>Share ideas<br>Data availability |

Table 4.11.3 Knowledge Management category evolution

Knowledge refers to applied information that has become experience, in-depth understanding and expertise in a particular topic area of interest.

#### 4.10.4 Web Analytics

In this research environment Web Analytics refers to using a Web Analytics package whether in the UK or in SA to measure what potential customers and customers are doing online. Web Analytics has proven to be a complex tool. It also extends to Web Analytics adoption, Web Analytics implementation and Web Analytics benefits in this study.

| Category after second iteration                 | Initial Categories  | Derived from Open Coding (after a number of iterations)   |
|---|---|---|
| WA adoption<br>WA implementation<br>WA benefits | WA usage<br>South African (SA) WA<br>United Kingdom (UK) WA<br>WA Complexity<br>WA adoption<br>WA packages<br>Key owner<br>Ownership<br>Web site types<br>WA implementation<br>Implementation<br>Business Process<br>Business Requirements<br>Recommendations<br>Communication to clients<br>Communication within team<br>WA benefits<br>WA value | Usefulness<br>Commitment<br>Frequency of usage<br>(underutilised)<br>Not for all organisations<br>In-house WA solution<br>UK – WA widely accepted<br>UK – businesses cannot do business without WA<br>SA – mobile<br>WebTrends (WT)<br>Google Analytics (GA)<br>Digital Analyst<br>A single gatekeeper for WA<br>Self-service site<br>E-commerce site<br>Free WA tools<br>Commercial WA tools<br>Understand business needs<br>Communication content (e-mails)<br>Knowledge sharing sessions<br>Meetings<br>Workshops<br>E-mails<br>Tagging and configuration<br>Implementation Engineer<br>Importance of WA<br>Increase sales<br>Reduce costs<br>Improve retention<br>Create great customer journey<br><b><u>Making</u></b> teams' jobs easy<br>Value business case |

Table 4.11.4 WA category evolution

In this context, Web Analytics adoption consists of choosing a suitable Web Analytics package based on the Web Analytics requirements formulated by the business, assigning a key owner role to a team member and identifying the type of Web site being monitored.

I think it [Web Analytics adoption] is basically understanding users' behaviour online and how to understand member experience intelligence... what are they doing, where are they going, what we can do to improve their experience. Respondent AA4

I would say to them, [Web Analytics adoption involves] what decisions do they want to make, what are people are doing on the site, where are they going, what is happening on the Web site, where are they dropping off... Respondent AA6

Web Analytics implementation in this context consists of business processes, formulation of business requirements, recommendations to facilitate change, communication with clients and communication within a team.

I think it [Web Analytics implementation] is light implementation, it is easy to configure. The whole dependency on tags... We do not want to be duplicating data... Just to be able to distribute it to the business in a format that is relevant and understandable to them. Respondent AA4

well I would say we are not getting down to tagging solutions... Conversations about tagging... getting the technical foundation right, including the technical infrastructure which should be driven by business requirements. Respondent AA6

Other respondents thought that Web Analytics adoption and Web Analytics implementation mean the same thing, while other experienced respondents managed to define them as different concepts appropriately. For example, one respondent said:

I do not see a difference between Web Analytics adoption and Web Analytics implementation. Respondent AA3

Web Analytics benefits encompass the importance of Web Analytics and Web Analytics added value, in this context.

#### 4.10.5 Customer Experience

In the context of this study, customer experience entails services rendered and the customer journey, including e-commerce transactions.

Well because it provides you with an understanding of your members experience. It comes down to members experience at the same time reducing servicing costs.  
Respondent AA4

Customer Journey in this study refers to customer online behaviour: how an online visitor becomes an online customer, the preferred actions taken by clients to meet a goal, online processes made by customers, include the online quote process, the online application process, the online registration process, and the login process. Referrals include those from search engines, social media Web sites and others. The customer journey also refers to other aspects of customer online behaviour, how online customers become repeat online customers and are eventually retained (usually after four purchases or four instances of target actions), customer satisfaction, whether it is easy for an online visitor or an online customer to use the Web site to perform the preferable target actions and it also refers to understanding where online visitors are abandoning the Web site.

| Category after second iteration | Initial Categories  | Derived from Open Coding (after a number of iterations)  |
|---------------------------------|---|--|
| Customer Journey                | Behaviour<br>Conversion<br>Online activity<br>Online processes<br>Referrals<br>Retention<br>Satisfaction<br>Web site usability<br>Customer funnel | Online Quote process<br>Online Application process<br>Online Registration process<br>Login process<br>Clients' target actions<br>Drop-off points<br>Better service clients |

Table 4.11.5.1 Customer Journey category evolution

Services rendered in this context refers to creating an environment where customers can use a self-service service, or a call-centre service, where products are being sold online and products are being sold directly to the customers (offline).

| Category after second iteration | Initial Categories                                  | Derived from Open Coding (after a number of iterations)   |
|---------------------------------|---|---|
| Services rendered               | Services<br>Self-service<br>Call-centre<br>Products | Direct to Customer (D2C)<br>Online services<br>Service desk / centre<br>Minimize calls to call-centre<br>Members to self-service<br>Primary Medical Insurance (PMI) |

Table 4.11.5.2 Services rendered category evolution

#### 4.10.6 Problems

A problem is a challenge that is making it difficult to align to the digital strategy in the online team. The 'Challenges' category became a sub-category under the main category 'Problems', after a number of analysis iterations. Management perceived challenges as lack of knowledge, lack of processes to manage lack of knowledge, costs of adopting and implementing Web Analytics, proving return on investment (ROI), time to do in-depth analysis from data, knowing what to do with information realised after analysis is done, erroneous tagging and lost data. Some said:

It is hard to get through the numbers to get to what you want to know. Respondent AA2

I think that the business does not know what they want to measure and they do not know how to analyse the data. Respondent AA4

Open coding in this section was done on problems being experienced, usefulness, frequency of use, costs, lack of understanding, time-consumption, difficulties, lack of prioritisation, unavailability of data, lack of translating raw data into meaningful insights, dependency on other systems, few changes taking place in spite of the efforts that had been done and lack of knowledge.



After the second iteration, more analysis was made and this same coding gave rise to the central category 'Problem'. The links that were formed were experience and resolve.

| Category after second iteration | Initial Categories | Derived from Open Coding (after a number of iterations)  |
|---------------------------------|--------------------|--|
| Problems                        | Challenges         | Tagging issue<br>Lost data/no data available<br>Costs<br>Budget allocation for WA tools<br>Budget constraints (during global recession)<br>Improving ROI<br>Limited time for accessing WebTrends (WT)<br>Do not know how WebTrends (WT) works<br>Time/prioritisation<br>Agreement on the right solution<br>The solution is not easy<br>WA not getting business focus<br>(It is not put in the fore front of anyone's mind)<br>WA not trusted and not supported fully<br>No full-time team for WA<br>Lack of understanding for extracting value<br>Misunderstanding<br>Uncertainty<br>Lack of expertise & experience<br>Lack of knowledge<br>Translating raw data into understandable information<br>Complying with existing, different systems (dependant on other systems)<br>WA non-usage<br>Little change after efforts made<br>A lot of manual processes<br>Plethora of reports / No reports |

Table 4.11.6(a) Problems category evolution

More analysis was carried out using the method of constant comparison to group the problems under twelve headings that were going to be analysed further during the cyclical action research analysis. The twelve problem headings were lack of knowledge, costs, tagging issues, lost data or no data available, improving return on investment (ROI), time and prioritisation, agreement on the right solution, complex solution, translating raw data into understandable information, complying with different systems, a lot of manual processes and a plethora of reports or no reports.

The problems were analysed further and were classified into three categories, as the types above. These types are: Web Analytics adoption challenges, Web Analytics implementation challenges and Web Analytics post-implementation challenges.

| <b>Adoption challenges</b>                   | <b>Implementation challenges</b>            | <b>Benefits realisation challenges (post-implementation)</b>                     |
|--|---|--|
| lack of knowledge                            | lack of knowledge                           | plethora of reports or no reports  |
| Cost   | tagging issue                               | many manual processes  |
| improving return on investment               | lost data or no data available              | translating raw data into understandable information                             |
| agreement on the right solution              | time and prioritisation                     | Limited time for accessing WebTrends (WT)  |
| Budget allocation for WA tools               | complex solution (the solution is not easy) | Do not know how WebTrends (WT) works   |
| Budget constraints (during global recession) | complying with existing/different systems   | WA not getting business focus (It is not put in the fore front of anyone's mind) |
| Lack of expertise & experience               | Uncertainty                                 | WA not trusted and not supported fully   |
|  | Misunderstanding                            | No full-time team for WA   |
|  |   | Lack of understanding for extracting value                                       |
|  |   | WA non-usage   |
|  |   | Little change after efforts made   |

Table 4.11.6(b) Challenges classified

One of the biggest challenges within the research environment was data accuracy issues. To support this, one respondent said:

Accurate data is number one [in defining success of Web Analytics], once we get into a stage where we have accurate data. The number would not be 100% percent. When it goes down how do we support and manage that – it is the credibility issue in the business. I think that is the area that we got wrong to date. Respondent AA6

There have been apparent data accuracy problems in the area of Management Information (MI). The complexity of Web Analytics poses problems for human resources, during its adoption, implementation and maintenance. Additional problems are experience by customers and human resources within the organisation with regard to the online customer experience.

#### 4.10.7 Innovation

Innovation in this study includes the possibility of new names for Web Analytics, in order to bring a better meaning to the subject. It also entails generating insights for new and improved methods of intervention to deal with WA challenges, while referring to a fairly recent innovation called mobile WA that has been adopted and implemented by a number of vendors.

| Category after second iteration | Initial Categories  | Derived from Open Coding (after a number of iterations)  |
|---------------------------------|---|--|
| Innovation                      | Innovation<br>Experience analytics<br>Interactive analytics<br>Insights generation<br>Mobile WA | Review the name 'WA'<br>Derive insights from data<br><u>Launch</u> new services<br>WA should be part of BI |

Table 4.11.7 Innovation category evolution

Annually the organisation under study, especially the online team is encouraged to be innovative; therefore the programme change management core category facilitates innovation.

Respondents from qualitative interviews challenged the naming convention of Web Analytics compared to the actual practice. They commented as follows:

I think it [Web Analytics] is more experience analytics and interactive analytics, not WA. WA should be falling under a bigger scheme on Business Intelligence.  
Respondent AA4

Another respondent concurred with the above statement:

I would never use the word 'analytics' – analytics is just the tool used to produce insights... I would emphasise the value of it. I would emphasise: What decisions would it lead you to make. Respondent AA6

There are emerging innovative practices in Web Analytics, such as mobile Web Analytics. A well-versed respondent from the Online Team continually suggested the following:

I do not think the adoption on Web sites is more in SA, I would say mobile would play a bigger role. Respondent AA4

Mobile Web Analytics has not been adopted nor implemented in the organisation selected for the study, because Web Analytics adoption and implementation is still in its infancy. More innovation is necessary in Web Analytics, in this organisation. The business unit encourages human resource to obtain more knowledge with regard to Web Analytics so that they may be innovative in the subject.

#### **4.10.8 Internal and external business relationships**

It is important to build internal relationships within an organisation, so that different teams may collaborate and yield better results regarding Web Analytics. A respondent from the second case organisation stated:

In collaboration, we would get great result. Respondent BB3

External business relationships are also useful for organisations who have adopted and implemented Web Analytics. These relationships, especially with the Web Analytics vendors, decision makers in organisations dealing with Web Analytics and even competitors, would be useful in order to understand the current trends in Web Analytics. It would also be useful to be part of an advisory group making recommendations when a new version of a Web Analytics package has to be updated. Another respondent from the second case organisation said the following:

It is important to build relationships so that you may be able to build viable communities for your vision. Respondent BB2

| Category after fourth iteration              | Initial Categories                                     | Derived from Open Coding (after a number of iterations)                            |
|--|--|--|
| Internal and external business relationships | Team dynamics<br>Networking<br>Competitor Intelligence | Working with other business units<br>Working with vendors<br>Suppliers<br>Networks |

Table 4.11.8 Internal and external business relationships category evolution

#### 4.11 Links and relationships for the core categories

Links, which are how the categories are related, are described in the analysis below. There were many links and relationships between actions, activities and categories that were identified throughout the study. This section highlights the links and the relationships for the core categories.

| Core category                         | Link           | Core category                                |
|---------------------------------------|----------------|--|
| 1) Programme Change Management (PCM)  | is informed by | Customer Experience                          |
| 2) Programme Change Management (PCM)  | is informed by | Management Information (MI)                  |
| 3) Programme Change Management (PCM)  | monitors       | Knowledge Management (KM)                    |
| 4) Programme Change Management (PCM)  | supports       | Web Analytics (WA)                           |
| 5) Knowledge Management (KM)          | improves       | Customer Experience                          |
| 6) Management Information (MI)        | reports        | Customer Experience                          |
| 7) Web Analytics (WA)                 | improves       | Customer Experience                          |
| 8) Management Information (MI)        | requires       | Web Analytics (WA)                           |
| 9) Knowledge Management (KM)          | enhances       | Management Information (MI)                  |
| 10) Knowledge Management (KM)         | advances       | Web Analytics (WA)                           |
| 11) Programme Change Management (PCM) | encourages     | Internal and external business relationships |

#### 4.12 Links for core categories

## 4.12 Illustration of the study

The illustration of this study describes and explains the content of this study. It clarifies how clients of vendors deal with problems and programme change management within their roles in an e-commerce context.

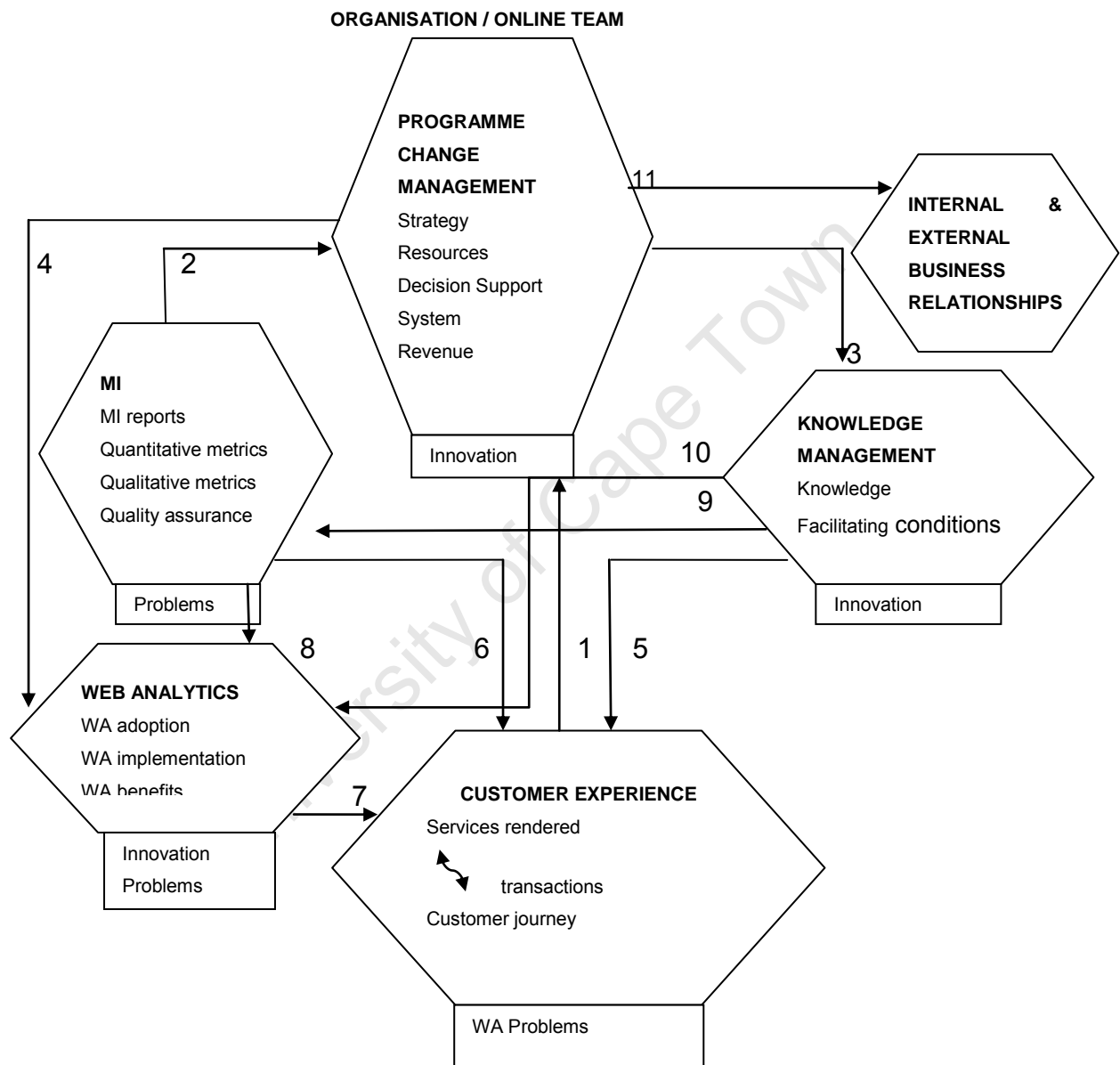


Figure 4.13 An online marketing Web Analytics sequence for an e-commerce Web site

The above-mentioned illustration, Figure 4.13, is described under the seven core categories of the study and explanations are given in the context of the research environment. Descriptions and explanations are founded upon both primary and secondary data sources.

- Problems

There have been apparent data accuracy problems in the area of Management Information (MI). The complexity of Web Analytics poses problems for human resources in practice, during the adoption, implementation and maintenance of Web Analytics. More problems were experienced by customers and human resources of the organisation with regard to the online customer experience.

- Innovation

At least annually, the organisation under study, especially the online team, is persuaded to be innovative; therefore the programme change management core category encourages innovation. There are emerging innovative practices in Web Analytics, such as mobile Web Analytics. More innovation is necessary in Web Analytics.

The linkages are numbered from one to ten. Each link is described and explained as follows:

Link 1 Programme Change Management (PCM) encourages Customer Experience. On Friday mornings, there were Customer Experience Review sessions where various business units, worked together to discuss various initiatives pertaining to Customer Experience, so that Change Analysts and Senior Managers could brainstorm and foster change to continually improve Customer Experience.

Link 2 Programme Change Management (PCM) requires Management Information (MI). A weekly report called the Online Management Information (MI) Steering Committee Report was distributed to the Chief Executive Officer and the Senior Management of the organisation and also to key stakeholders within the organisation. The weekly report was available on request to anyone who needed it. The report consisted of key metrics with benchmarks for the online environment. Even though a commentary accompanied the report, the focus was primarily on quantitative metrics.

Link 3 Programme Change Management (PCM) monitors Knowledge Management (KM). A Programme Management division of the organisation that was responsible for implementing change (amongst other functions) worked closely with the Online Team. The division examined and supervised knowledge within human resources and encouraged areas of development and supported growth in acquired and applied knowledge. The more people made an effort to know about what was expected of them within their roles (and over and above their roles), the greater were the chances of achieving change within the organisation. There were a number of human resources within the Online Team who were knowledgeable with regard to their own roles.

Link 4 Programme Change Management (PCM) supports Web Analytics (WA) adoption and implementation. Senior management within the organisation supported adoption and implementation of Web Analytics.

Link 5 Knowledge Management (KM) improves Customer Experience. The Customer Experience sessions assisted in sharing knowledge amongst relevant human resources as well as ideas for improvement. When there was an attitude of continuous learning in the organisation, strategies to improve online processes developed, therefore improving Customer Experience.

In this organisation, the culture of striving to improve Customer Experience existed, although there was still room for improvement.

Link 6 Management Information (MI) reports Customer Experience. During some Customer Experience sessions, there were opportunities to analyse various aspects of the customer journey online and present recommendations for change.

Link 7 Web Analytics (WA) measures Customer Experience. The Web Analytics tools used in this organisation had various reports that measured customer behaviour online, such as customer funnel reports. There were other qualitative metrics that were measured using Web Analytics tools, such as target actions that had been performed. Improvement was still needed in the area of analysing and reporting on qualitative metrics, such as understanding customer drop-off point online and why those points were causing abandonment of the online process.



Link 8 Management Information (MI) incorporates Web Analytics (WA). Some of the metrics reported on in the weekly Online MI Steering Committee report were obtained from Web Analytics tools. The report was incomplete without the Web Analytics reports. Web Analytics also reported the status of customer behaviour metrics on a weekly basis (and even on a daily basis).

Link 9 Knowledge Management (KM) which enhances Management Information (MI). There were various reports, from various systems and sources that can formulate MI reports. A consolidated view of these reports brought knowledge to recipients of the reports. The more the people in the organisation knew the content of the MI reports, the more Knowledge Management was enhanced.

Link 10 Knowledge Management (KM) advances Web Analytics (WA). In the context of this organisation, Web Analytics was adopted and implemented and it enhanced Knowledge Management. People in relevant teams were striving to know more about Web Analytics, therefore advancing Web Analytics. Advanced Web Analytics was in its early phases in this organisation. There was evidence of continuing future growth because of investments already made and because of further envisaged investments for Web Analytics.

Link 11 Programme Change Management (PCM) encourages Web internal and external business relationships. Senior management within the organisation supported networking with other Web Analytics professionals and business owners in the digital environment, building relationships with internal Web Analytics stakeholders, creating a better customer experience for clients, and building relationships with vendors.

#### **4.13 HyperRESEARCH analysis report**

Basic, descriptive statistics such as total count of the comments about each category have been used to measure the responses in the organisation about the main categories in the study. Table 4.14 indicates that a majority of responses in the qualitative interviews revolved around the problems that are experienced in the organisations. An expression of the need to resolve the problems was also evident in the responses.

Web Analytics adoption and implementation comments were significant in the responses. There also seemed to be an apparent need for improvement in the area of change management with the organisation. Figure 4.14 illustrates the weighting of the main categories of the study.

| Code                                       | Total |
|--|-------|
| Change Management                          | 21    |
| Customer Journey                           | 13    |
| Decision Support System                    | 10    |
| Facilitating Conditions                    | 4     |
| Innovation                                 | 2     |
| Internal & external business relationships | 8     |
| Knowledge                                  | 1     |
| MI Reports                                 | 14    |
| Problems                                   | 65    |
| Qualitative Metrics                        | 4     |
| Quality Assurance                          | 14    |
| Quantitative Metrics                       | 7     |
| Resources                                  | 12    |
| Revenue                                    | 17    |
| Services Rendered                          | 1     |
| Strategy                                   | 16    |
| WA Adoption                                | 23    |
| WA Benefits                                | 6     |
| WA Implementation                          | 28    |
| Web Analytics Practice                     | 22    |

Table 4.14 Descriptive statistics for preponderance of evidence of the categories after 2<sup>nd</sup> iteration

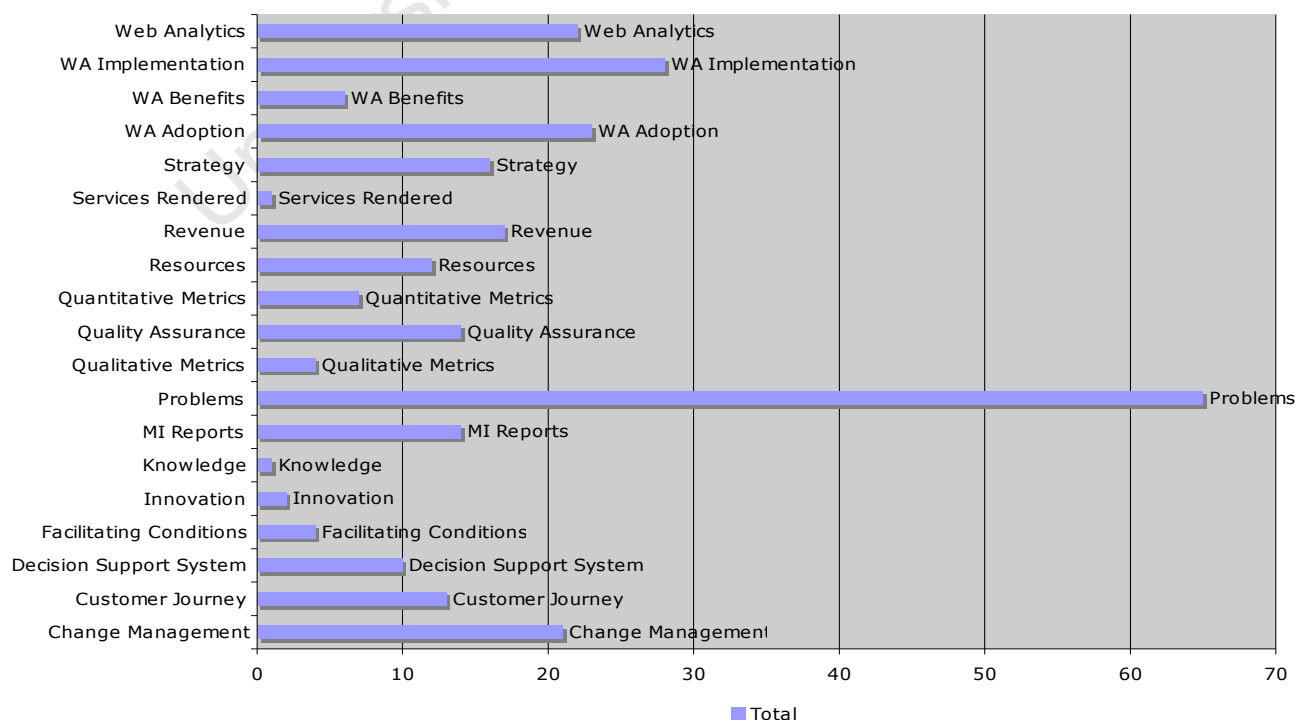


Figure 4.14.1 Total count of main categories of research illustrated after 2<sup>nd</sup> iteration

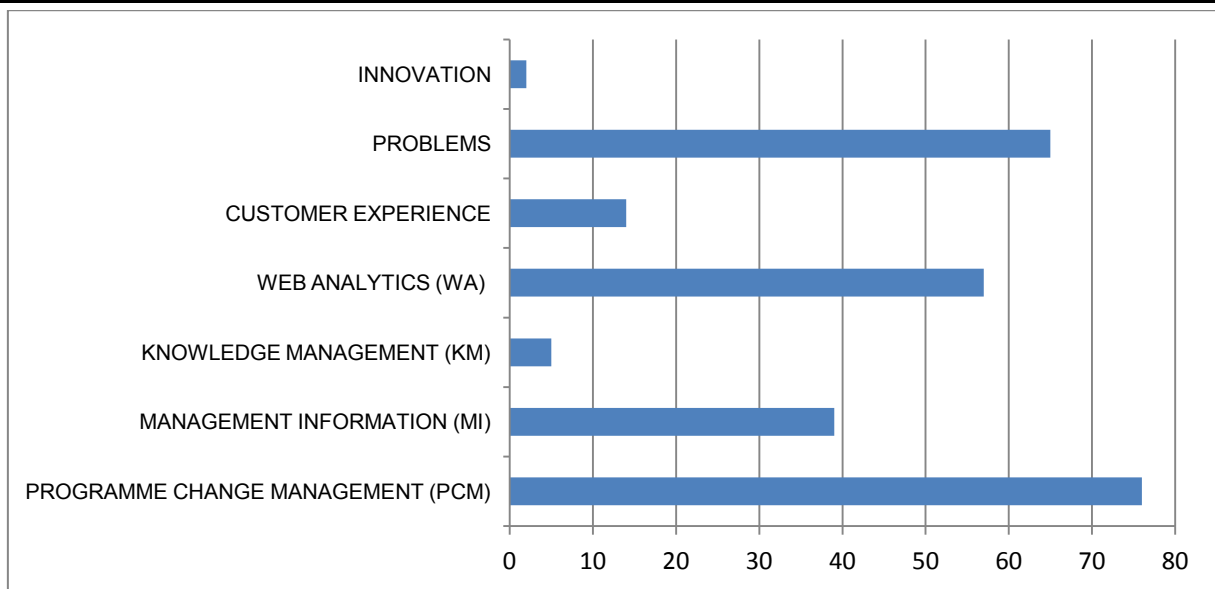


Figure 4.14.3 Descriptive statistics for preponderance of evidence of the categories after 3<sup>rd</sup> iteration

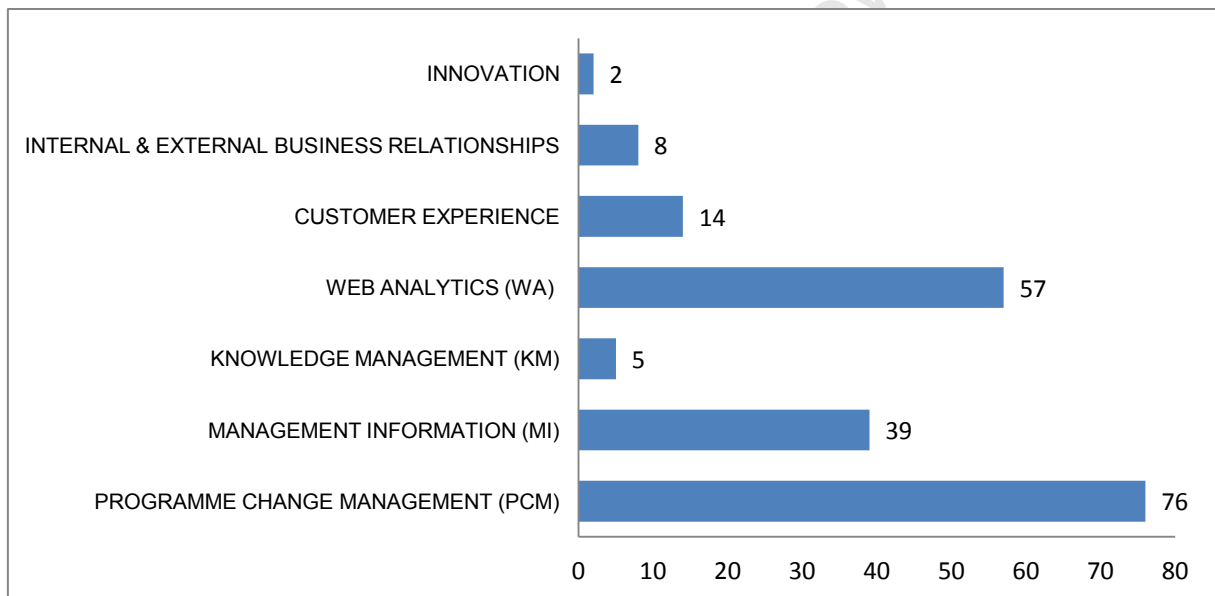


Figure 4.14.3 Descriptive statistics for preponderance of evidence of the categories after 4<sup>th</sup> iteration

It seemed as if the respondents from the case organisations highlighted aspects of programme change management and many problems. Web Analytics adoption, Web Analytics implementation and Web Analytics benefits were discussed substantially in the qualitative interviews. The Management Information report was fairly talked about in the interview responses. Customer experience was not discussed much. The least discussed concepts were knowledge management and innovation. After the fourth iteration, problems were categorised into appropriate concepts and an additional concept: ‘internal and external business relationships’ concept was gathered from respondents.

#### **4.14 Adoption models and Web Analytics models**

A number of information systems, e-commerce adoption theories, Web Analytics models and frameworks from various authors are discussed below. The gaps that are identified in the theories are discussed as well.

##### **4.15.1 E-business and e-commerce adoption models**

In a study undertaken by Poon and Swatman (1999) depicted in Figure 4.15(a), it was found that there are, in general, low levels of integration of new Internet applications, such as Web Analytics tools, with a firm's existing systems. Common reasons for the lack of integration included: low volumes of structured messages arriving from the e-commerce services, lack of in-house IT development skills, few affordable turn-key solutions and lack of external pressure to encourage or assist with integration. Poon and Swatman (1999) suggest that in the e-commerce domain there are three levels of integration.

The model illustrates that at the adoption stage an organisation may reach full integration of adjusting to a new process. The concern with this model is that it seems to regard that adoption and implementation as being at the same level. This researcher suggests that full integration of an organisational process adjustment may only be reached after successful implementation. The model proposed in this thesis differentiates between the adoption stage and the implementation phase.

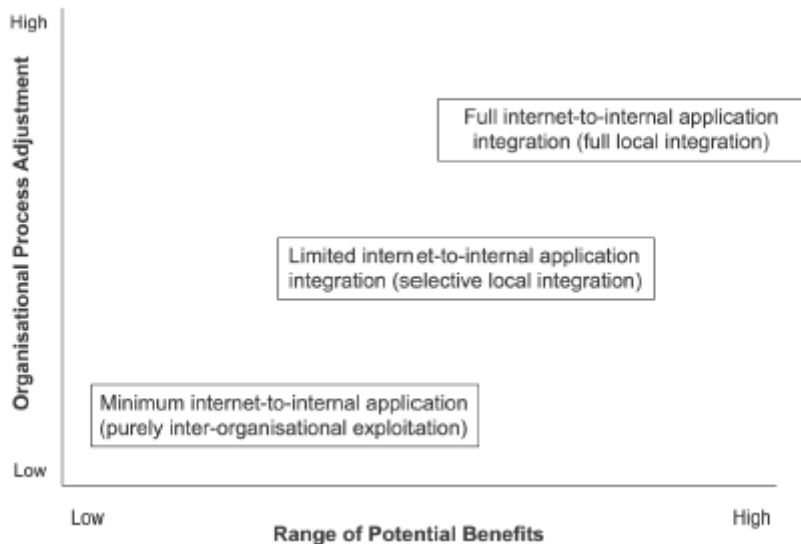


Figure 4.15(a) Poon and Swatman (1999) suggested model for e-commerce adoption

The framework suggested by Daniel and Wilson (2002) in Figure 4.15(b) postulates that intentions or drivers in a firm result in a consideration of the adoption of e-commerce.

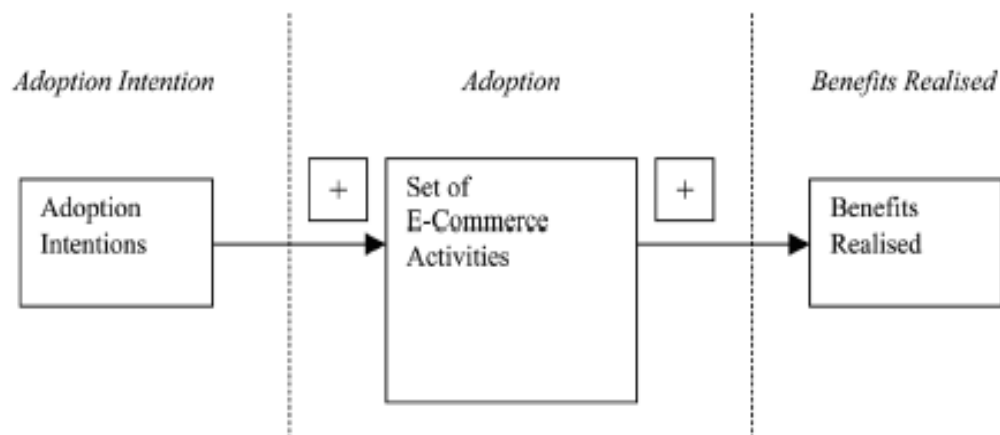


Figure 4.15(b): Conceptual framework for adoption of e-commerce (Daniel & Wilson, 2002)

The objectives of Daniel and Wilson's (2002) study are primarily to:

- Identify reasons that are important in the adoption of e-commerce by SMEs (adoption intentions).
- Identify the benefits they are realising from e-commerce developments.
- Determine if areas identified as important are indeed those where benefits are being realised.

The framework above is simple and it illustrates that there may be benefits realised when a set of e-commerce activities are adopted. The concern with this framework is that the set of e-commerce activities are not clearly defined. It is not clear what kind of e-commerce activities need to be done in order to realise benefits. The model in this study is a process model and it gives the high-level steps to get certain benefits realised when Web Analytics is adopted and implemented successfully.

Fillis *et al.* (2004) established sets of macro- and micro-level factors that have been shown to impact the acceptance of e-business, its implementation and further development in a small firm. In particular, globalisation, technology, external and internal owner or manager related challenges, competencies and entrepreneurial issues have been shown to interact in the development of e-business. These have been constructed in a conceptual framework in order to understand the reasons behind acceptance and non-acceptance of e-business change in the smaller firm.

Training programmes can then be targeted to those smaller firms already embracing an e-business philosophy in order to develop longer-term integrated business strategies. In addition, enterprise agencies can also separately target those smaller firms with an existing negative disposition towards e-business with respect to the potential merits of adoption, while also outlining the potential dangers of non-adoption. However, it must also be understood that e-business is not appropriate for organisations across a majority industry sectors. Specific sectoral circumstances with more traditional methods of securing business may still dominate those markets (Fillis *et al.*, 2004).

The e-business development adoption model by Fillis *et al.* (2004) is complex. The concern with the model is that it is very complex and there are hardly any diagrams to illustrate the adoption model. It is challenging to start appropriating the model in a different environment or to simply use the model in a practical situation. The model of the study illustrates diagrams of a domain model and a process model to clarify how to use the model.

The five studies included in Table 4.15(c) are critically reviewed, each study reporting to some extent on the adoption of e-commerce or new Internet applications. Organisational challenges are also highlighted. The importance of including the five e-commerce adoption studies is to highlight the various challenges that they bring to light. The first study in Table 4.15(c) was reviewed by Rotchanakitumnuai and Speece (2003) who are concerned with organisational challenges in the banking sector. These are: management negative attitudes, lack of IT resources, and lack of knowledge of the users (and potential users) of e-commerce. These challenges are evident in some SMEs. The author acknowledges the relevance of these challenges in SMEs adopting e-commerce or new technologies.

The second study by Bègin and Boisvert (2002:24) is on organisational challenges. They state that: culture, structures and systems, technology, expertise, and resources are organisational challenges. Bègin and Boisvert (2002) speak of other barriers that exist in individuals, which include perception, knowledge and leadership. This study is interesting, because the same challenges could be viewed as inductors. The very aspect that could be a problem could be turned around and be used for success. This study is not selected as a basis for this critical review because it does not provide substantial references.

The third study is by Chircu and Kauffman (2000:65). Their organisational challenges are vague and are discussed alongside industry barriers under the heading valuation barriers. There are no clear e-commerce organisational challenges stipulated in this study.

The fourth study by Rao, Metts and Monge (2003) on organisational challenges discusses organisational challenges at various stages of organisational progression. They propose an initial stage, and an adoption/implementation stage. The organisational challenges are different for each stage.

| <b>E-commerce adoption conceptual models</b>                          |   |   |
|---|---|---|
| <b>Reference</b>  | <b>Theme of model / study</b>   | <b>Aim of the study</b>   |
| Poon & Swatman (1999)   | <i>Suggested model for e-commerce adoption</i>  | An exploratory study of small business Internet commerce issues   |
| Daniel & Wilson (2002)  | <i>Conceptual framework for adoption of e-commerce</i>  | Adoption intentions and benefits realised: a study of e-commerce in SMMEs                                 |
| Fillis et al. (2004:186)  | <i>Conceptual model of e-business development</i>   | Factors impacting on e-business adoption and development in the smaller firm                              |
| <b>E-commerce adoption conceptual studies highlighting challenges</b> |   |   |
| Rotchanakitumnuai & Speece (2003)                                     | Organisational barriers in the banking sector   | Barriers to Internet banking adoption: a qualitative study among corporate customers in Thailand          |
| Bègin & Boisvert (2002)   | They state that: culture, structures and systems, technology, expertise, and resources are the organisational challenges.   | The internal factors that can make or break e-commerce implementation                                     |
| Chircu & Kauffman (2000)  | Their organisational challenges are vague and are discussed alongside industry challenges under valuation challenges.   | Limits to value in electronic-related investment  |
| Rao, Metts & Monge (2003)   | Rao <i>et al.</i> (2003) discussed organisational challenges at various stages of organisational progression  | Electronic commerce development in small and medium sized enterprises: a stage model and its implications |
| Farhoomand, Tuunainen and Yee (2000)                                  | The paper comprises organisational challenges and other (technical, economic, political, cultural and legal) challenges. The organisational barriers consist of <i>negative attitudes, lack of knowledge, resistance to change and lack of management commitment.</i> | Barriers to global electronic commerce: a cross-country study of Hong Kong                                |

Table 4.15 (c): Summary of the e-commerce adoption conceptual models and studies



Authors (Farhoomand *et al.*, 2000; Bègin & Boisvert, 2002) do not agree with Rao *et al.* (2003) with regards to considering the adoption and implementation as a single stage, and express the view that the adoption stage precedes the implementation stage. Rao *et al.* (2003) refer to: technological resistance within the organisation and expertise, acceptance of growth by managers, financial investment, and development of telecommunication infrastructure as initial organisational barriers. They further state that: development of B2B interfaces, cultural or language issues are classified as organisational challenges at both the adoption and implementation stages.

The fifth study reviewed is by Farhoomand, Tuunainen and Yee (2000). This is a framework of organisational challenges reported in a paper entitled 'Barriers to Global Electronic Commerce: A Cross-Country Study of Hong Kong and Finland'. The paper discusses organisational challenges and other (technical, economic, political, cultural and legal) challenges. The organisational barriers consist of *negative attitudes, lack of knowledge, resistance to change and lack of management commitment*. The most significant challenges that are not mentioned in the study conducted by Farhoomand *et al.* (2000) are implementation costs and operating costs, based on a study conducted by Barnes and Hunt (2001:130). Other barriers consist of the establishment of infrastructure, integration of legacy systems, availability of applications and standards, capabilities and performance of the Internet security, governmental attitudes, and interagency coordination. This study is selected for this review as it also focuses more on smaller organisations.

The studies above, with the exception of Chircu and Kauffman (2000) proposed: lack of knowledge or expertise and lack of management commitment as common organisational challenges. Lack of IT resources or financial investment is reported by Rotchanakitumnuai and Speece (2003), Rao *et al.* (2003) and Bègin and Boisvert (2002:24). Culture or language issues, are common to Rao *et al.* (2003) and to Bègin and Boisvert (2002:24).

#### **4.15.2 Existing Web Analytics process models or frameworks**

As the Web Analytics industry matures, Ballardvale (2004), Coleman (2004) and Sterne (2004) point out that there are still many Web sites that are challenged to obtain value out of Web Analytics.

For the purposes of this study, the focus will be on the e-commerce and e-business Web sites. Sterne (2004) suggests the following practical insights into how to get value out of Web Analytics:

- Identify key stakeholders
- define primary goals for Web site
- identify the most important Web site visitors
- determine the key performance indicators (KPIs)
- identify and implement the right solution
- use multiple technologies and methods
- make improvements iteratively
- establish a process of continuous improvement
- check references from users of Web Analytics packages
- report on actionable data driving business decisions

Coleman (2004) suggests that a Web Analytics strategy should include the following steps:

- identify whether to build or buy a Web Analytics solution
- use Web metrics and methods
- report on actionable data and store data
- make improvements iteratively
- check references from users of Web Analytics packages
- review organisational issues

Other authors (Waisberg & Kaushik, 2009) agree with Ballardvale (2004), Coleman (2004) and Sterne (2004) that Web Analytics is a process that proposes a virtual cycle for Web site optimization. Based on Web Analytics' best practices (Waisberg & Kaushik, 2009), propose that a framework for analysing Web site performance should include the following steps:



Figure 2.4.2 Web Analytics practice process

Some authors (Kaushik, 2009; Waisberg & Kaushik, 2009) define Web Analytics 2.0 as the analysis of qualitative and quantitative data from a Web site and its competitors to drive continual improvement of the online experience that customers and prospects have, which ultimately translates into the Web site's desired outcomes (online and offline). It is a new way to think about Web data and new sources of data, which builds the complete picture of customer behavior in websites: in-site and off-site, online and offline, quantitative and qualitative. They illustrate the framework of all the steps of Web Analytics 2.0, five interesting ways of thinking about data in Web sites using qualitative and quantitative data to make holistic decisions. Figure 4.15 is the framework used, showing how each step uncovers a new layer of information, ultimately leading to insights that will drive an Analyst to make the necessary changes to increase revenue and become a champion in the organisation (Waisberg & Kaushik, 2009).

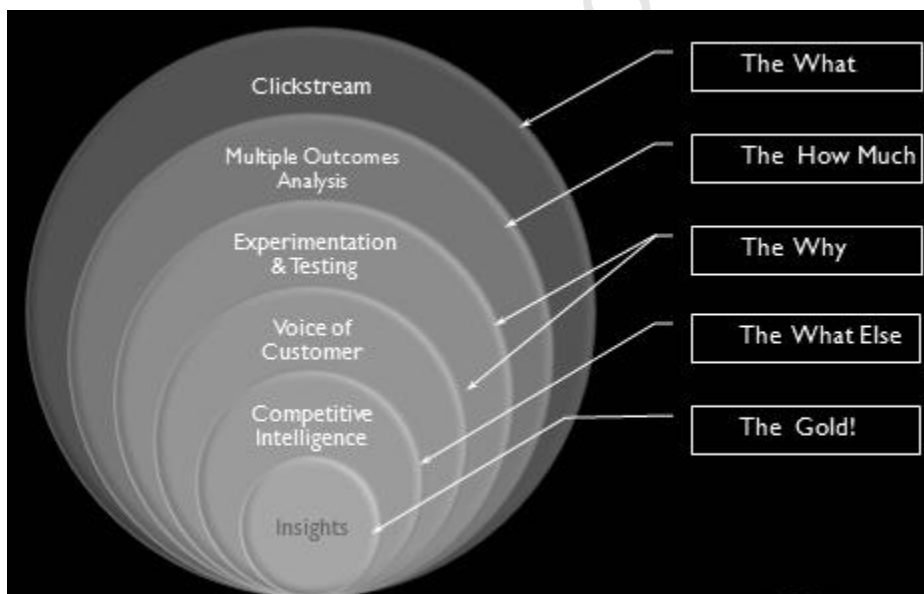


Figure 4.15. Web Analytics 2.0 Framework (Kaushik, 2009; Waisberg & Kaushik, 2009)

| <b>Web Analytics process models/frameworks</b> |   |   |
|--|---|---|
| <b>Reference</b>                               | <b>Theme of model / study</b>   | <b>Aim of the study</b>   |
| Sterne (2004)                                  | <i>10 Steps to measuring Web site success</i>   | The founder of the Web Analytics Association (WAA) depicts a step-by-step plan using Web technologies, to ensure overall Web site success   |
| Coleman (2004)                                 | Developing a Web Analytics strategy for the national science digital library                  | Suggestions on how to develop a Web Analytics strategy specifically for a national science digital library  |
| Kaushik (2007)                                 | <i>Web Analytics: an hour a day</i>   | A step-by-step guide of learning Web Analytics the correct way. The aim of the book is to suggest a modern guide depicting Web Analytics challenges and opportunities.  |
| Kaushik (2009)                                 | <i>Web Analytics 2.0: the art of online accountability and science of customer centricity</i> | The aim of this book is to lay out specific strategies and execution Web Analytics models to evolve from simply leveraging click stream tools to incorporating insights of qualitative data, experimentation and testing. |
| Waisberg & Kaushik (2009)                      | <i>Web Analytics 2.0: empowering customer centricity</i>                                      | The aim of the study is to describe the standard practices of Web Analytics. The study details each step of the process, going from defining goals and KPIs to collect, analyze, and take action using Web site data.     |

Table 4.15.2: Summary of Web Analytics models, books and studies

### 4.15.3 Gaps in the existing models

The current Web Analytics practice entails Web analytics packages that provide ready-made statistics, but may also supply raw data to enable further analysis (Voorbij, 2010). For example, Web site owners may be interested to see which pages are frequently visited by new visitors and which ones by returning visitors. It is challenging to interpret the data and the analysis done to produce actionable insights. Some people in the organisation viewing the data may not even understand what the data mean (Atkinson, 2007). Therefore the interpretation is seldom done, let alone applied using the above-mentioned Web Analytics iterative process.

The current practice is flawed, because the actionable insights for improvement are not sufficiently emphasised. A general problem with Web analytics is that an incomplete picture of Web site usage is provided. Often the data does not cover some Web site traffic because of untagged areas of the site which results in incomplete available data (Atkinson, 2007). Some organisation tend to want to adopt Web Analytics tools, such as SpeedTrap, that automatically tag the Web site, without thinking about the reporting issues that will emanate from information glut.

In the first study, Sterne (2004) articulates the importance of identifying key stakeholders well. It is important to acknowledge people who are involved in Web Analytics and clearly define their roles. He does not clearly illustrate how his suggested Web Analytics process will work. He gives ten steps that may be implemented in any order, which implies that a person has to decide in what order to implement the steps. The assumptions are not clearly stated in Sterne's (2004) concerning how to manage the knowledge of people involved. The model in this study has a knowledge management aspect to address the knowledge that is necessary to adopt and implement Web Analytics. Knowledge Management in this study entails clarifying the roles people play in Web Analytics and acknowledging the relevant knowledge they need to acquire to fulfil their roles competently.

In the second study, Coleman (2004) mentions organisational issues in his framework. In his explanation of organisational issues he does not clearly suggest the role of people in the Web Analytics process nor how it fits into the overall Web Analytics strategy. The model in this study addresses the role by including people in the domain model. The cross-functional management concept of the model in this study includes an important aspect of resources, as discussed above. Resources include Web Analytics stakeholders and their appropriate roles.

In Kaushik's (2007) book on Web Analytics an hour a day, there are great lessons regarding Web Analytics in practice. Throughout the book the importance of having a key responsible person for Web Analytics is emphasised. There are useful technical and practical suggestions regarding Web Analytics, however the book lacks a consolidated view of guideline on getting started with adopting and implementing Web Analytics.

The model in this study illustrates an organisational process model to apply when adopting and implementing Web Analytics. There are twelve organisational guidelines to be used with the model to minimise Web Analytics adoption and implementing challenges.

In Kaushik's (2009) book on Web Analytics 2.0, he illustrates the framework of all the steps of Web Analytics 2.0, five interesting ways of thinking about data in Web sites using qualitative and quantitative data to make holistic decisions (See Figure 4.15). He further uses the same Web Analytics framework in his study with Waisberg (2009), showing how each step uncovers a new layer of information, ultimately leading to insights that will drive an Analyst to make the necessary changes to increase revenue.

The limitations of the book include a lack of addressing knowledge management for Web Analytics stakeholders; the Analyst is encouraged to subscribe to some suggested Web Analytics blogs. Waisberg & Kaushik's (2009) is customer centric and pays little attention to internal processes and resources. The model in the study encourages a balance between resources in the organisation and customer experience. The important concepts in the model of the study are cross-functional management, knowledge management and customer experience.

The final study conducted by Waisberg & Kaushik (2009) depicts a Web Analytics process model, which is recommended for a Web site Manager/Owner for Web site optimisation. Their model is not an organisational Web Analytics adoption and implementation model. The model is a great starting point for understanding the Web Analytics process in practice. The model in this study is an organisational model and it takes note of various Web Analytics stakeholders who have various roles. The simplified, proposed models will address the above-mentioned gaps in the existing models. The next section will discuss how the gaps will be minimised.

#### **4.16 An expansion and an evolution of the model**

The model in the study was founded from the thoughts of the researcher regarding Web Analytics. The thoughts were then compared with Driver and Louveris' (1998) simplified marketing sequence, in Figure 2.8.1.1, because Web Analytics tends to inform online marketing strategies in practice.

The Driver and Louveris (1998) model has an e-commerce aspect to it and that makes it appealing for this study, due to the fact that the type of Web site being investigated is a combination of an e-commerce Web site and a self-service Web site.

During the literature sensitivity phase of the study, it was possible to identify several concepts that were relevant to address the research question and to clarify important aspects of the research environment for a wider audience. These aspects were included in the theoretical guideline of the study, in Figure 2.8.1.2. As described in chapter two, the people, the challenges and the practice were added as phases of the proposed Web Analytics themes, in Figure 2.8.1.2.

The grounded theory model was used to derive a model which was grounded in the empirical data of the research environment and was developed after rigorous analysis. In Figure 4.16, the model is descriptive and explanatory of the context of the study. It clarified how clients of vendors deal with problems and programme change management within their roles in an e-commerce context. The model is portable in order that it may be tested in other similar (or even different) environments.

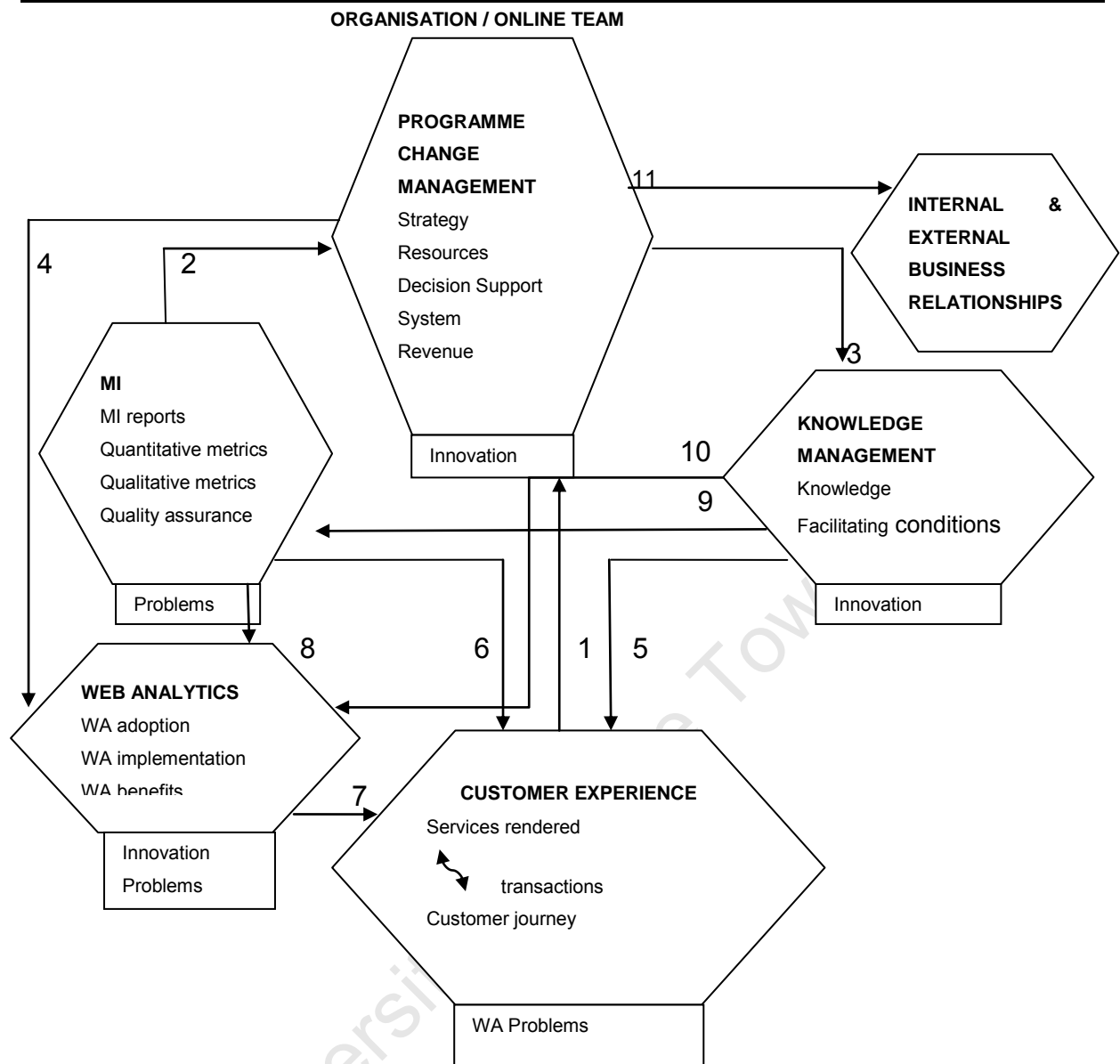


Figure 4.16 An online marketing Web Analytics sequence for an e-commerce Web site

#### 4.17 Interpretation of the proposed model

A model is a pattern, plan, representation, or description designed to show workings of a system. In an organisation with an e-commerce Web site, it is important to add value using Web Analytics strategy. Organisations do this by adhering to the following recommendations

- Providing guidelines for defining, communicating, and monitoring the organisation's digital strategy
- Redesigning core business processes, if necessary, to align with the organisation's digital strategy
- Enabling process resources to support change, innovation and business goals.



After iterations of in-depth investigations on empirical observations, the empirical observations were classified and the links between the themes were stated, while theoretical recommendations were interpreted and developed. Then the members were checked. The proposed model had seven core categories. These were programme change management, management information, knowledge management, Web analytics, customer experience and innovation. It was observed that although the respondents used these terminologies within the context of their work, they were not able to give good descriptions or explanations of these concepts. The interview respondents used abbreviations that they clarified only after they were asked the meanings. Some abbreviations were context-specific: even though they may have been the same as general abbreviations in the field of Information Systems, here they meant something different.

These are the seven core categories:

- strategic cross-functional change management
- quantitative and qualitative management information
- knowledge management
- beneficial and advanced Web Analytics
- improved customer experience
- Web Analytics adoption and implementation problems
- continuous innovation in Web Analytics and Information systems

After the fourth iteration; there were seven core categories. Continuous innovation in Web Analytics and Information systems should be integrated in five of the classifications in the model. Web Analytics adoption and implementation problems are there at various times in the five classifications and they can be minimised or eradicated completely. So, the Web Analytics adoption and implementation problems are not permanently there - they change. Sometimes other different kinds of Web Analytics adoption and implementation problems may replace minimised or eradicated ones. The links remain the same in the interpreted model as in the proposed model (according to the interview respondents).

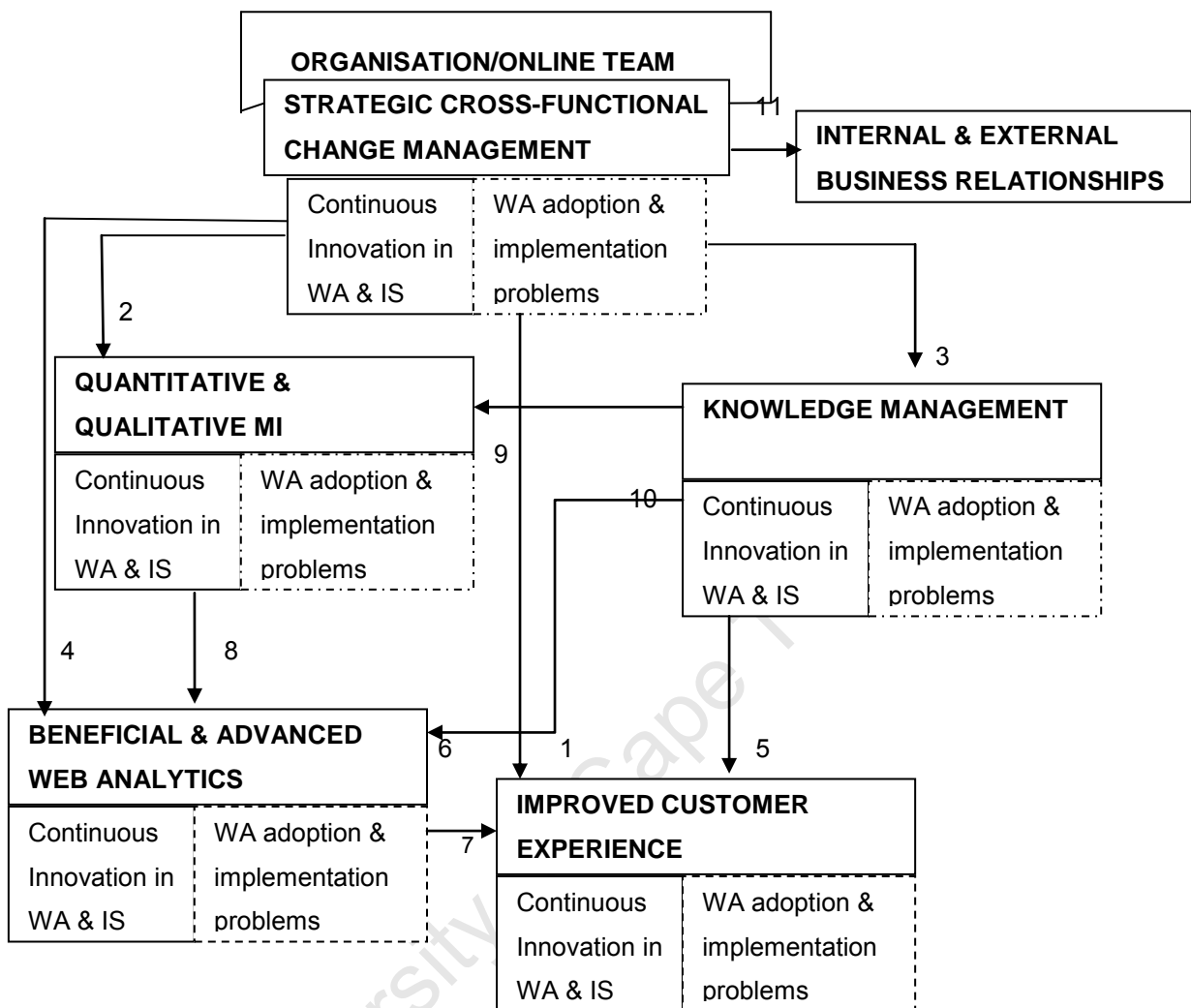


Figure 4.17.1 An interpretation of the proposed model

Another iteration simplified the interpreted model. The simplified version of the interpreted model revealed the five pillars of Web Analytics in an online marketing environment. These five pillars of Web Analytics' adoption and implementation should be established in an environment of continuous innovation in Web Analytics and Information systems.

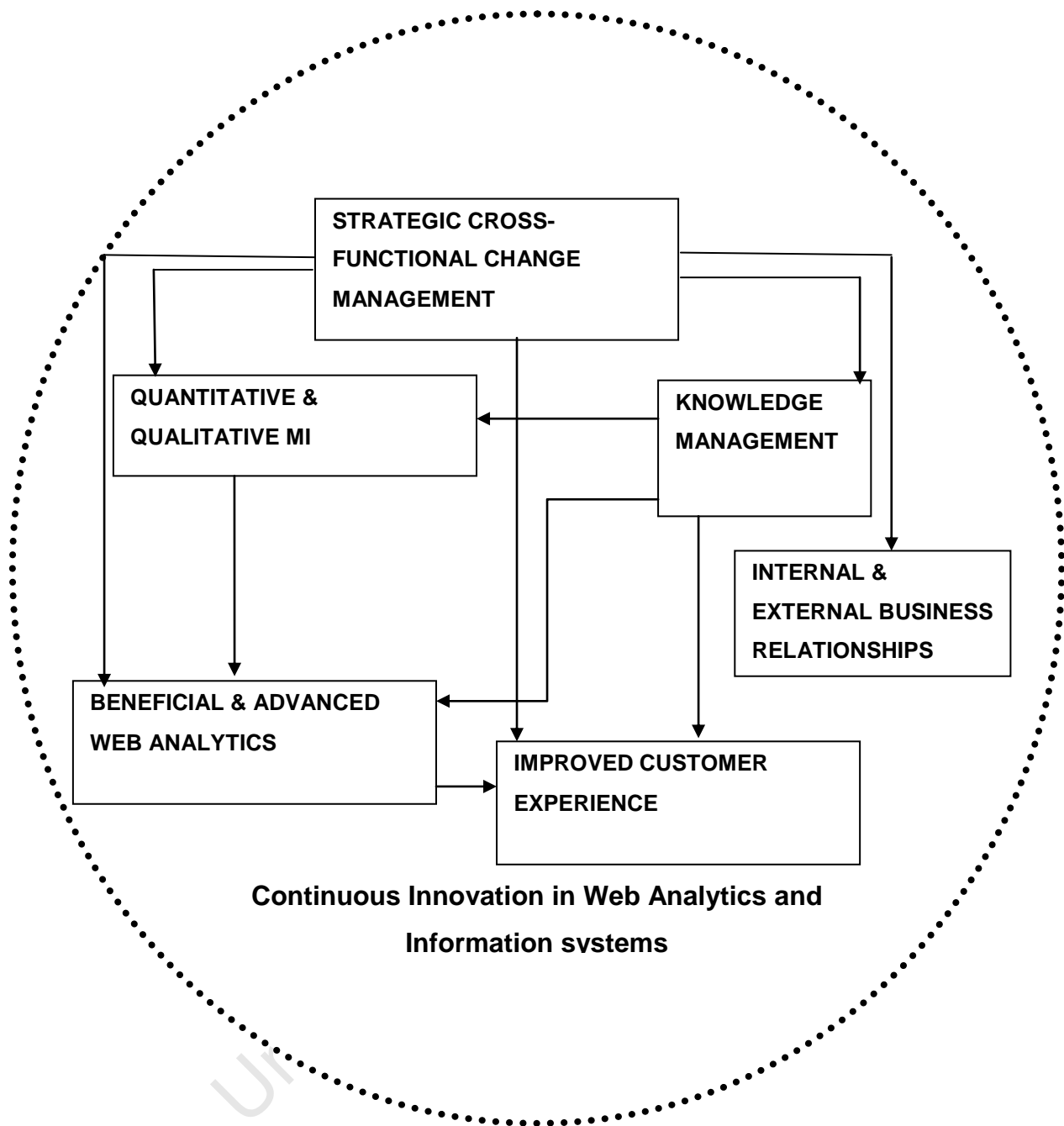


Figure 4.17.2 A draft version of the proposed model

After conducting further interviews in the second organisation, experts in the Web Analytics and Business Owners, the proposed model changed and consisted of two models, namely: a domain model and a process model. Both the diagrams are the final contribution of the study. Figure 14.17.1 is another draft in the evolution of the model for this study.

Any e-commerce organisation considering adopting and implementing Web Analytics, may consider laying the foundation for these five pillars, namely: strategic, cross-functional change management, knowledge management, qualitative and quantitative Management Information (MI), improved customer experience and beneficial and advanced Web Analytics.

As stated above, the five pillars of Web Analytics' adoption and implementation should be established in an environment of continuous innovation in Web Analytics and Information Systems. There are two illustrations below and the first one is the domain of the model. The domain defines the key concepts of the research results. Then the process model follows, which explains how to implement the suggested Web Analytics framework.

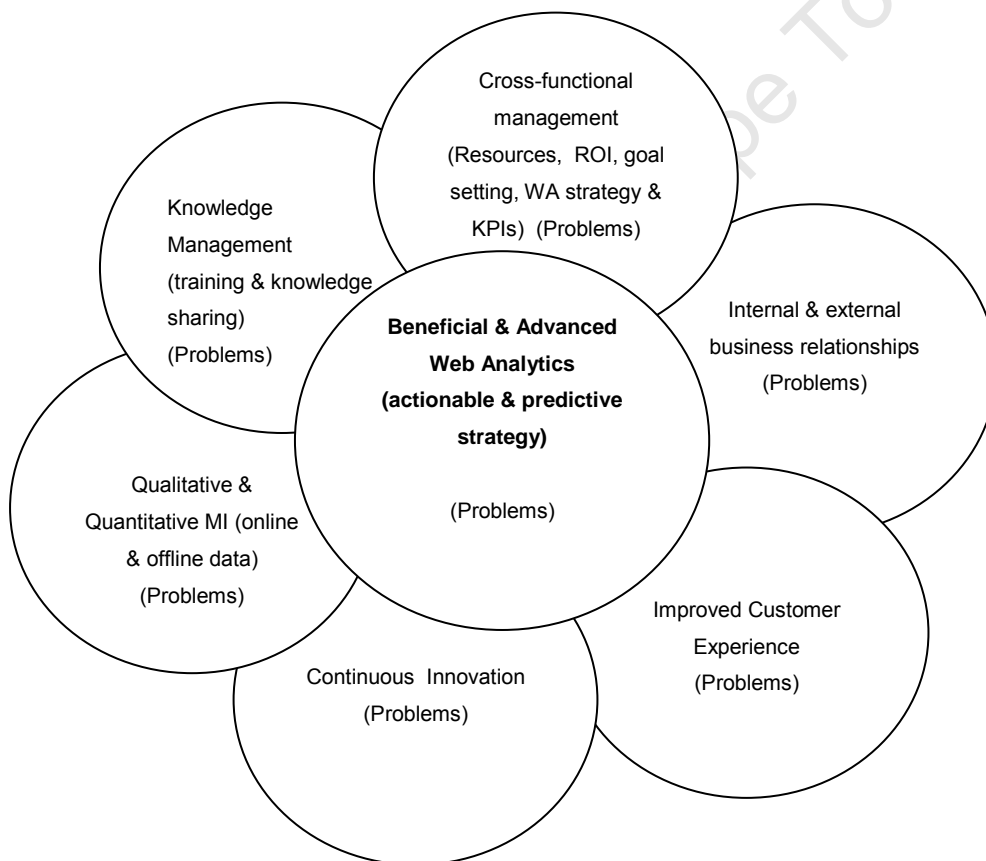


Figure 4.17.2(a) A simplified version of the proposed domain model

Figure 14.17.2(a) is a simplified, proposed domain model for this study. The domain model consists of seven themes that an organisation should be mindful of before adopting Web Analytics or themes to measure during Web Analytics adoption.

The seven themes are:

- Beneficial and advanced Web Analytics. This suggests actionable and a predictive strategy.
- Cross-functional management. This highlights the importance of measuring return on investment (ROI), goal setting and key performance indicators (KPIs).
- Knowledge management. This recommends training and knowledge sharing within the organisation.
- Qualitative and quantitative management information. Online and offline data are both important for analysis and interpretation of data to bring about valuable insight for decision making.
- Continuous innovation has to be explicitly planned and there should be time set aside for encouraging continuous innovation.
- Improved customer experience would be the result of understanding the customer data and understanding the feedback from customer surveys, and then reacting appropriately.
- Build (and maintain) internal and external business relationships that will add value to the overall digital strategy pertaining to Web Analytics.

Figure 14.17.2(b) below is a process model derived from the domain model above. The solid concepts are defined above and other concepts clarify how to implement Web Analytics in practice. It is important to note that if proposed changes are implemented, then there may be some impact on the sales.

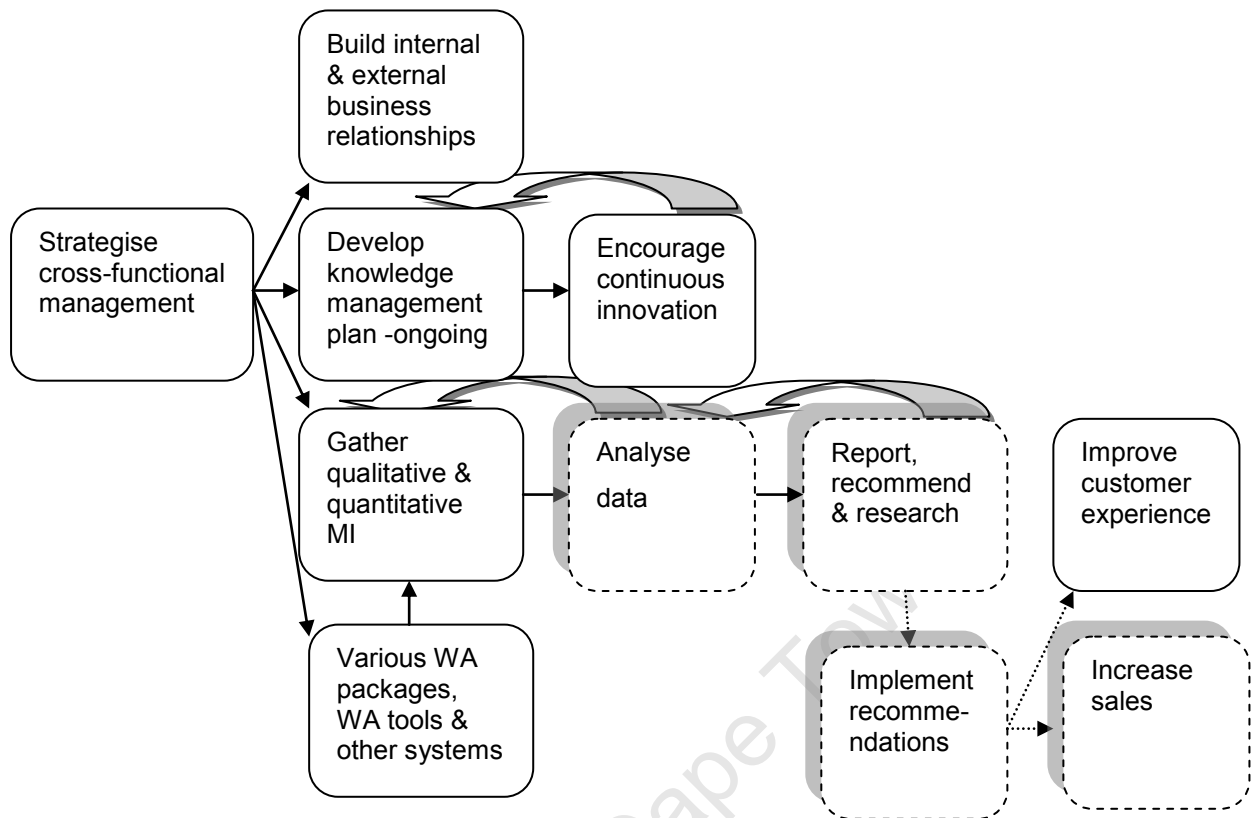


Figure 4.17.2(b) A proposed process model (from the domain model)

These models were taken to experts in the field of Web Analytics and business owners for feedback with regards to usefulness and the value they may potentially bring to businesses.

After laying the foundation of a Web Analytics strategy, it is important to turn the strategy into action. There are ten ways to succeed in an e-commerce environment for turning strategy into action that have been formulated by Kalakota and Robinson (1999) and have been applied successfully in the organisation in this study.

## 4.18 Generalisability

### 4.18.1 Member checking

Member checking is another research technique used to ensure credibility and validity in the study (Ngwenyama, 2009b). Member checking was also conducted in this study.

The fact that the meaning is embedded in social context in this interpretive study is a credibility and reliability confirmation measure in itself (Ngwenyama, 2009b). Some research participants where their empirical observations had the same meaning as expressed in the responses were verified.

#### 4.18.2.1 Feedback from business owners and Web Analytics experts

BO1 explained that he gets involved in information models design. The language for the model for business people is important. BO1 and WAEx3 agreed that the language should be adapted for its audience appropriately. They both said that the terminology that is used should be modified for business people. For example, there should be a difference in representation for a brochure and for Web site. This model is for the novice of Web analytics; therefore it should be a visual model. BO1 recommended that infographics be used to present the model (See an example of a Web Analytics infographic below in Figure 4.18.1.2(a).

He substantiated his views in that infographics will help people conceptualise model easier. BO1 emphasised that the model is commercial and it has a commercial end due to the intention of wanting to increase sales in the process model. Continuous innovation and iterative design go together. Iterative design is a key tool of Web Analytics for improving the design. For example, when using a shopping cart, there are fall off points during the online shopping experience because of fuzzy messages at the point of commitments. Enhanced customer experience is important in Analytics.

BO1 suggested that the model should emphasise the whole system design. Analytics will help people understand online and offline traffic and costs of getting quality traffic. Quality traffic is important as opposed to getting any kind of traffic. Return on investment (ROI) becomes crucial and should be highlighted in the model. Analytics helps people to understand best source of quality traffic. Analytics helps you put rhetoric argument and it shows the Web Analytics team where they are missing opportunities. Testing should be done using Web Analytics.

In summary, BO1 proposed that the two strong points of his suggestions are taking cognisance of the iterative design of the whole system. This entails the value of quality traffic and efficiently converting the quality leads to sales. The second point is that each organisation needs to point out what they want to do, clarify their Web site goals, so that they may realise their own end point when they achieve it.

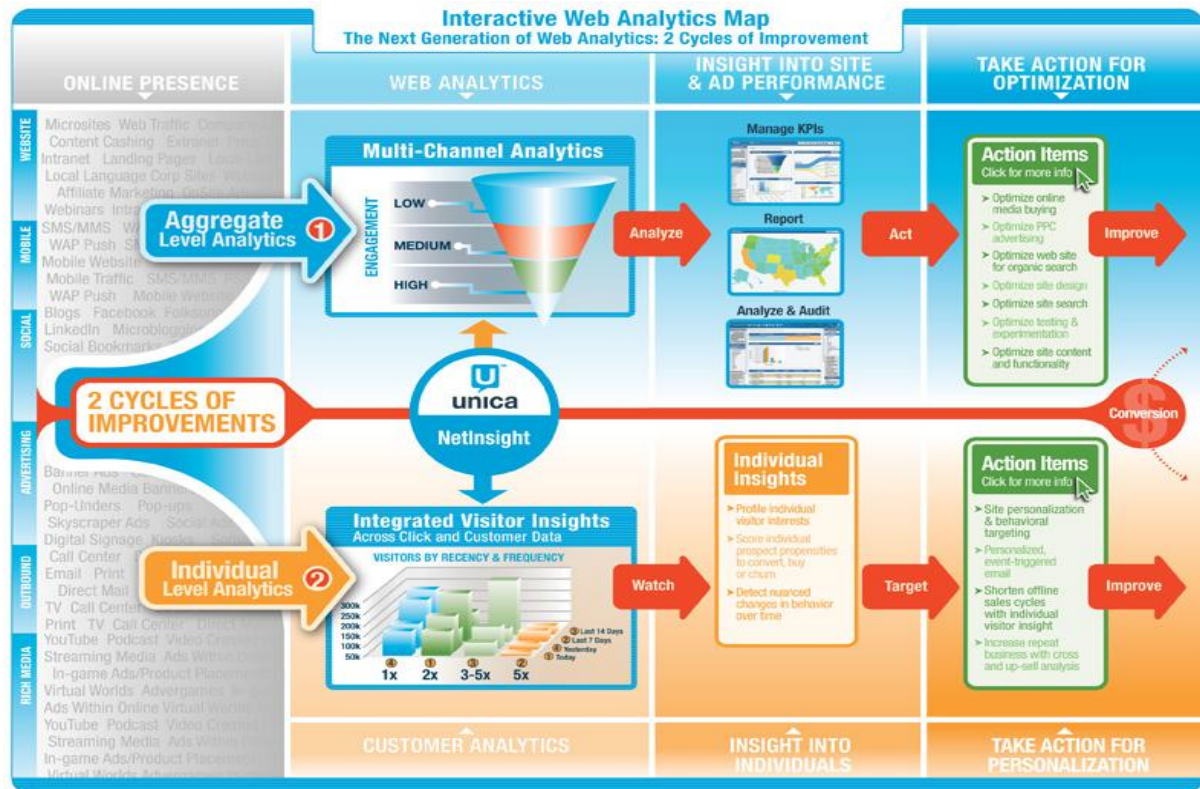


Figure 4.18.1.2(a) Web Analytics Infographic (Unica, 2009)

The researcher observed that BO1 refers to Web Analytics as Analytics and probed to find out why. BO1 responded that people need to differentiate between Web Analytics and mobile analytics. He elaborated further stating that the first domain is Internet (both to personal computer (PC) base and mobile base). Interestingly enough, BO2 tends to refer to Web Analytics as Analytics as well.

BO2 and WAE<sub>x2</sub> agreed that the process model is great and it is good. BO2 confirmed that the cross-functional model is important. To understand what the company's Web site is set out to do is important. The people in Analytics and their roles are important. It is crucial to continuously innovate on the company's site. BO2 and WAE<sub>x3</sub> encourage the Web Analytics resources to be inclusive of a wide variety of roles and skills sets, as they have in their own team.



For example, if your roles are not fully representative you may lack some key issues that are not working well. It would be advisable for a Web Analytics team to have Web developers, business leaders, market research consultants and digital analysts. Through Analytics management can make decisions based on facts. BO2 said:

People get data and think it is gospel – it is important to interpret data.

The Web Analytics experts concurred with the business owners in their responses. WAEx1 stated that before developing a strategy; start with Web site objectives, using that as a starting point. That is quite a big thing. That will help guide how many resources a company needs and which Web Analytics tools are going to use. WAEx1 states that he would put something more specific along that stream of knowledge management (KM). Something such as a documentation plan. Another thing that WAEx1 thinks is important is to have iterative improvement. He gives an example as follows:

We kept on going to the business asking what reports they want, we found that sometimes business cannot articulate what they want... We changed report filtering a little bit. We changed the formatting of reports. We used the feedback from the business.

WAEx1 proposes that from the reports to WA tools be a link (add another loop on the model, see below as illustrated in Figure 4.18.1.2b). It is vital to put in place a measurement process to measure impact for improving customer experience and increase sales.

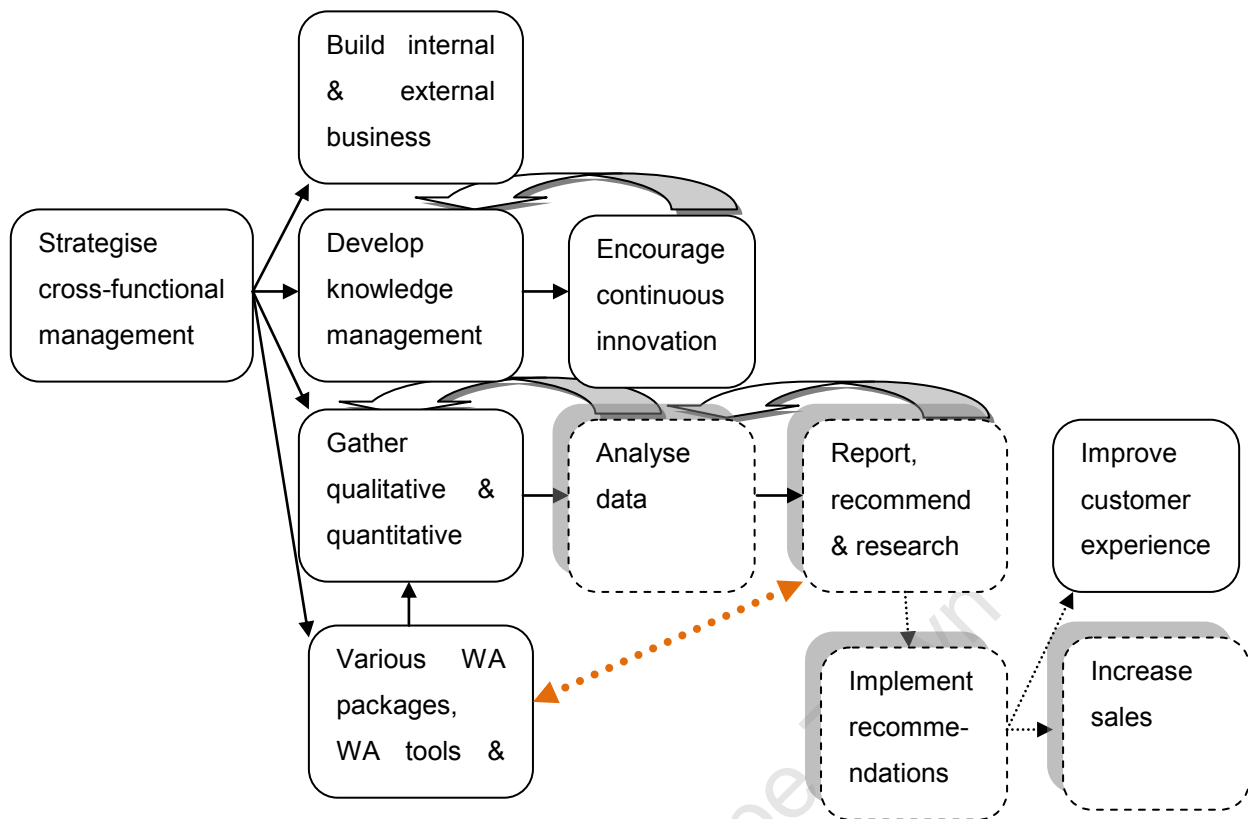


Figure 4.18.1.2b Web Analytics model improvement recommended by WAEx1

WAEx3 feels that the model should revolve around: 'Improve customer experience'. A customer reports back to the whole organisation. A company gets that via social forums, social media, and a company gets reviews. Customers will review of a company's Web site. According to WAEx3 the customer is central; the process should work around the customer. He elaborates and gives an example that in other companies, research and feedback comes from customers. The customer feedback feeds into marketing. Sometimes companies give something for free to customers to get feedback. The companies should make it about customers.

Business owners had the same opinion that the models and the guidelines would assist companies offer better customer experience to their clients. BO1 substantiated that return on investment (ROI) will be impacted because a company will understand where sales are being abandoned. BO2 substantiated that knowledge is vital. He further elaborated that the more knowledge a company has they may serve clients better. Web Analytics experts agreed that companies would offer a better customer experience to their clients because of applying the models and guidelines.

WAE<sub>x1</sub> substantiated that he thinks if companies can successfully interpret their data and connect data to their strategy, they can offer better customer experience to their client. Data needs to be constantly interpreted and companies need to take steps to apply the interpretation into actionable data (WAE<sub>x1</sub>; WAE<sub>x2</sub>). WAE<sub>x3</sub> substantiated that the model gives them a better understand of what the customer wants. Business owners agreed that companies would increase sales and become more profitable because of applying the models and guidelines. BO<sub>1</sub> substantiated that iterative design, which is illustrated in the models would impact an increase in sale and profitability. BO<sub>1</sub> and BO<sub>2</sub> further elaborated that it is about reducing operational costs. Web Analytics experts concurred that companies would increase sales and become more profitable because of applying the models and guidelines. WAE<sub>x1</sub> verified that it depends on what companies are measuring, for example page conversions, can lead people to fill in forms and generate high proportion of sales leads. He further stated that most definitely from that perspective, if there are more interpretations that are applies. WAE<sub>x2</sub> verified that the clearer the Web site objective is, the more succinct the Web site. If the objective of the Web site is to sell, surely the company will impact sales. If companies are bringing down the bounce rate, they may increase sales (WAE<sub>x2</sub>).

Business owners felt that they could easily implement the models to utilise Web Analytics in increasing your profits. They felt that the models and guidelines are easy to understand. BO<sub>1</sub> and BO<sub>2</sub> corroborated that:

Without analytics companies may not understand how to increase sales. The entire user journey and the online experience are important. It works nice in this model. The model is easy to understand, because it spreads nicely around the organisations.

In general, BO<sub>1</sub> emphasised that the way the models are presented is important. BO<sub>2</sub> confirmed that the model of the study is a great model for what it is intended to achieve. He stated that

I think it is a great model. I think people need to understand the power of Analytics. It is not just a 'techie'. It makes one think how do we change that business owners be involved in Analytics. For example, if one of my clients had this model in the beginning, they would have done better than they are currently doing.

WAE<sub>x1</sub> commented that

I think what would be beneficial to novice Analytics companies is a simpler step-by-step process. I would start by choosing the package, technical implementation steps, until generating a report. A ten step process of starting from nowhere to generating a report for business would be useful.

Generally speaking WAE<sub>x2</sub> said that

I would say, decide what your key measurable metrics are. Use a reporting dashboard. Analytics in itself is daunting. A dashboard is kind of a 'health check' on a company's Web site.

WAE<sub>x3</sub> gave general feedback as follows

I would take this model and create a business stream and a client stream and where they meet up a company could make a decision, in that way they can see where they are lacking and where they can improve. A company can do that when they get feedback from customers. For example, at eBay, they get immediate feedback.

BO<sub>2</sub> and WAE<sub>x1</sub> expressed that the twelve guidelines covered the initial, important points well for a company that is getting started in Web Analytics. In the next section some of the comments from business owners regarding the twelve guidelines to minimise Web Analytics adoption and implementation problems is incorporated.

#### **4.19 Summary**

The analysis that was done initially yielded 88 concepts. These concepts were streamlined to nineteen main categories, and finally collapsed to seven categories. Many problems were discussed by the respondents in qualitative interviews. These problems were eventually collapsed to twelve problems and were then analysed further. A description and an explanation of how clients of vendors dealt with Web Analytics adoption and implementation was presented. Most of this evidence was gathered using descriptive statistics.

This chapter presented an interpretation of the findings extracted from the analyses of the grounded theory and thematic analysis that were presented in earlier sections of this chapter, in the light of literature and broader meanings outside the research environment. The outcomes of the analyses were compared to literature. A model and an interpretation of the model were formulated. A set of guidelines to adopt and implement Web Analytics was recommended.

It was apparent that the scholarly approach was unfamiliar to industry. Even though the organisation was willing to follow the agreed upon research methods, when they were actually applied some managers grew impatient. The next chapter discusses the evaluation and conclusion of the study.

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## CHAPTER FIVE

|          |   |            |
|----------|---|------------|
| <b>5</b> | <b>EVALUATION AND CONCLUSION .....</b>                | <b>221</b> |
| 5.1      | Introduction .....                                    | 221        |
| 5.2      | Overview of the research and thesis summary .....     | 221        |
| 5.2.1    | Review of chapters .....                              | 221        |
| 5.2.2    | Thesis summary and discussions .....                  | 223        |
| 5.3      | Credibility and dependability .....                   | 232        |
| 5.3.1    | An audit trail .....                                  | 232        |
| 5.3.2    | Member checking.....                                  | 233        |
| 5.4      | Revisiting the research questions .....               | 235        |
| 5.4.1    | Primary research question .....                       | 235        |
| 5.4.2    | Secondary research question .....                     | 237        |
| 5.5      | Research contributions .....                          | 242        |
| 5.5.1    | Theoretical contributions.....                        | 242        |
| 5.5.2    | Methodological contributions .....                    | 243        |
| 5.5.3    | Practical contributions.....                          | 243        |
| 5.5.4    | Applicability of models .....                         | 245        |
| 5.6      | Assessment of the research.....                       | 245        |
| 5.6.1    | Evaluative criteria proposed by Klein and Myers ..... | 245        |
| 5.7      | Limitation of the research.....                       | 249        |
| 5.8      | Opportunities for further research .....              | 251        |
| 5.9      | Summary.....  | 252        |

## **5 EVALUATION AND CONCLUSION**

### **5.1 Introduction**

The previous chapter was concluded with important new knowledge of the study, consisting of the simplified version of the proposed model and the twelve guidelines for adopting and implementing Web Analytics in an organisation or an SME. This chapter concludes the research and presents an evaluation of what has been achieved in relation to the aim of the study. Credibility and dependability of the research study is described. The research questions are revisited to evaluate how they have been addressed. The research contribution is emphasised. A set of evaluative criteria is used to assess the study. Limitations of the research and opportunities for further research conclude the chapter.

### **5.2 Overview of the research and thesis summary**

#### **5.2.1 Review of chapters**

In chapter one, Web Analytics as an evaluative technique originating from was defined and driven by the business world in its need to get more value out of understanding the usage of its Web sites and strategies therein. It is the measurement, collection, analysis and reporting of Internet data for the purposes of understanding and optimising Web usage for the online visitor, the online customer and the business with Web site presence.

The author decided to follow a qualitative research strategy, based on data from two companies. Generalisability was conducted with business owners and Web Analytics experts from various companies. Grounded action research, as defined above, assisted in advancing and refining the practice of the action research method. Grounded theory for analysis was used to analyse the collected data. The format of the thesis suggested the selected layout of this study.

In chapter two, the topic area of interest was clarified and gained a general overview of the subject. The benefits of Web Analytics as a way to improve e-commerce Web sites are established. Web Analytics is set in the context of decision support systems, which is a subset of information systems. Another challenge pertaining to this study is the virtual team geographically located in South Africa and in the United Kingdom. Web Analytics in SA and in the UK was described and explored. The chapter ends with a short account of a marketing sequence model and the author's own conceptualisation of Web Analytics themes.

In chapter three, the five major elements of the research design are topic area of interest, idea context, research questions, methods, and credibility and dependability. These five major elements of the research design, together with the philosophical assumptions and research paradigms, continue to guide this study. Grounded action research is a method used in this study. Deliberations over the researcher's role and position with respect to the case organisation, and ethical issues are covered. Generalisability of research results is introduced theoretically.

In chapter four, the analysis that has been done initially yielded 88 concepts. These concepts were streamlined to nineteen main categories, and finally collapsed to seven categories. This chapter also presented an interpretation of the findings extracted from the analyses of the grounded theory and thematic analysis that were presented in earlier sections of this chapter, in the light of literature and broader meanings outside the research environment. The outcomes of the analyses were compared to literature. A second case organisation was introduced. More data was collected from an organisation that was knowledgeable in Web Analytics for generalisability of research results. A model and an interpretation of the model were formulated. A set of guidelines to save costs and minimise time when adopting and implementing Web Analytics were recommended. It was apparent that scholarly approach was unfamiliar to industry approach. Even though the organisation was willing to follow the agreed-upon research methods, when they were actually applied, some managers grew impatient.



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### 5.2.2 Thesis summary and discussions

Most organisations around the world have been pursuing usage of Web sites. Some organisations, especially e-commerce organisations are pursuing return on investment, profitability, effectiveness, reliability, utility, or competitive advantage when using Web sites (Phippen, 2004; Phippen *et al*; Kaushik, 2009). Web Analytics no longer limits the measurement of Web sites to simple Web site traffic; it also strives to measure customer online behaviour (Phippen, 2004; Phippen *et al*; Kaushik, 2009). It then becomes important for an e-commerce organisation to adopt and implement Advanced Web Analytics, which entails the monitoring and reporting of Web site usage so that enterprises can better understand complex interactions between Web site visitor actions and Web site offers to leverage insight to optimise the site for increased customer loyalty and sales (Phippen, 2004; Phippen *et al*; Kaushik, 2009).

At the core of every business, there should be a need to understand the customer, so that organisations may have effective strategies for customer-centric services. In most cases, customers want organisations with which they do business to improve constantly in quickness, convenience, customisation (personalisation) and cost (Kalakota & Robinson, 1999). In an e-commerce context that is primarily for converting and retaining customers, without adopting and implementing Web Analytics, it may be difficult (and close to impossible) to improve service. Without Web Analytics tools, e-business would not be able to measure and understand customer behaviour online; they would therefore not be able to offer convenience and personalised service, which are fundamental aspects for customer satisfaction.

There are organisations that are willing to invest in Advanced Web Analytics, like the organisation in this study. Analytix Trailblazer Inc. invested hundreds of pounds in Web Analytics packages, Web Analytics tools and human resources with Web Analytics knowledge so that they may get value and returns on their investment. This organisation had already overcome some Web adoption challenges and had some implementation challenges that were not being addressed in the beginning of the study. Subsequently, the organisation has some post-implementation challenges as well.

Some small medium enterprises (SMEs) that may be trading online may have challenges of investing hundreds of pounds or South African Rands in adopting and implementing Web Analytics as they would like the benefits that Web Analytics offer. This study then recommends cost-effective, Advanced Web Analytics strategies that have been adopted and implemented in an e-commerce organisation. Therefore this study also proposes a model and guidelines for adopting and implementing Advanced Web Analytics in an e-commerce organisation, especially an SME.

In the United Kingdom (UK), a vast majority of organisations perceive Web Analytics usage as imperative in conducting e-business (Phippen *et al*, 2004). Even with the positive perception of Web analytics usage, about 30% of the UK organisations use Web Analytics for strategy formulation (Phippen *et al*, 2004). However in South Africa, there is still lack of understanding of Web Analytics benefits and the value that it may add to e-businesses (Dakela & Seymour, 2008). SMEs are questioning Web Analytics benefits and the initial costs of adopting Web Analytics. In SA organisations Web Analytics strategy is in its infancy (Dakela & Seymour, 2008).

Web analytics is evolving into a sophisticated methodology; the shortcomings of a collection of simple Web metrics are now being addressed and complimented with qualitative Management Information (MI) (Phippen, 2004; Phippen *et al*.; Kaushik, 2009). Globally Web Analytics is becoming advanced, while some developing countries and some SMEs are lagging behind. Even though some organisations are advancing in Web Analytics and others still lag behind there are still some persistent questions to be answered pertaining to e-commerce organisations. How do SMEs (Small and medium enterprises) involved in e-commerce approach the implementation of Web Analytics? What problems do SMEs encounter, and what model would be helpful in successful integration of Web Analytics, in the context of their online presence? This study aims to address these important questions in the area of Web Analytics and Information systems.

The nominalist view was used in this study, because Web Analytics players and the researcher have defined some guidelines shaping the structure of the current practice in Web Analytics (Burrell & Morgan, 1979). The guidelines keep on changing and progressing, while people involved in Web Analytics try to understand the lack of frameworks and informative models in their environment.

This study is interpretive and aims at major team players in the online team and some key Web Analytics stakeholders of the selected organisation (Burrell & Morgan, 1979). It aims at providing prospects for thorough investigation of opinions in the early stages of the adoption process, allowing me to participate while gaining a better understanding of problems and identifying attitudes and influences.

The anti-positivistic assumption was selected because it had to assist me to gain knowledge of reality through social constructions, which involved questions about the people involved in Web Analytics field, in practice, in the environment in which they work (Burrell & Morgan, 1979).

In this study, each person was viewed as having a free will to make choices and to justify why those choices were made in the organisation they work for. Participants in the study were informed that they have a right to challenge the status quo in the workplace and question any aspect of this study.

This study is supported by the ideographic view, because the practice emphasised the analysis of subjective accounts which entailed attending weekly meetings, participating in projects and being involved in the day-to-day activities of the organisation (Burrell & Morgan, 1979; Roode, 1993). In this study the researcher was positioned in the research environment and interpreted research results from the perspective of the research participants.

The researcher focused on Web Analytics within the organisation. The perceptions that the research participants had about Web Analytics was determined. The interpretations with the research participants within the organisation of the study were confirmed. Meaning in this study was considered to be embedded in the social context (Ngwenyama, 2009b).

A combination of interpretive and radical humanist paradigms was used for this study, because, in practice, Web Analytics challenges are multi-faceted, ranging from stability to radical change, rarely allowing people to study them within a single paradigm (Roode, 1993). A multi-paradigmatic approach is often indicated or required (Roode, 1993). For this study a multi-paradigmatic approach was explored.

The field of Web Analytics was studied at a subjective level because of the dynamic nature of Web Analytics which involves statistics (regulated) and online customer behaviour (evolving), and because the researcher has participated as an Analyst, using Web Analytics tools in the research environment.

Grounded action research was used in this study to investigate the important questions that should be answered in this study. There was limited literature sensitivity and there was no framework upon which the research was based due to the canons of conducting grounded action research. The method used in this study entails merging some of the grounded theory techniques with the theory formulation steps in action research (Baskerville & Pries-Heje, 1999). The research targeted key stakeholders in an online team within an organisation. The group of eight participants consisted of a multinational, virtual team, with cases from the United Kingdom and South Africa. These were team members working on Web Analytics adoption and implementation from different departments formulating an online team of stakeholders. Two of the online team members were developers who have been recently hired as temporary staff members.

There were four other Web Analytics stakeholders from the customer marketing team. One out of the four members resigned before a qualitative interview was conducted with her. Working with me, the business unit formed a team. The researcher participated in a project of changing one Web Analytics tool to another in a selected organisation. Later the researcher was offered an opportunity to participate in projects as a digital analyst in the online team by signing a grounded action research contract. Some analysis was conducted and recommendations given, which were implemented.

The results of the data analyses reviewed as research results stood for new knowledge contributed by the thesis. The companies using Web Analytics should apply strategic, cross-functional change management in their environment. This entails having a multi-channel and multi-disciplinary approach in Web Analytics adoption and implementation, so that necessary changes may be applied when necessary.

On the other hand literature concurs with the findings of this study (Eick, Graves, Karr, Marron, & Mockus, 1999; Aladwani, 2001) that Web Analytics strategies usually involve change and necessarily then Web Analytics software packages should change, through an ongoing process of maintenance. Another author (Aladwani, 2001) though takes it a step further and suggests that organisations should evaluate the status of change management efforts. There are other authors (Kramer & Magee, 1990) that who view change management differently by clearly separating management responsibility and Web Analytics software package concerns. In this study an argument was made that senior management is responsible for making decisions pertaining Web Analytics software concerns, there is no separation in that change management. Web Analytics software package concerns should be resolved by people who can authorise the changes, they would not resolve themselves.

The quantitative and qualitative management information is essential for decision making and strategic alignment to the business unit's digital vision at Analytix Trailblazer Inc. Globally, the current practice of measuring quantitative and qualitative metrics is growing (Kaushik, 2007, 2009). The Web Analysts need to measure what the online visitors and online buyers do when they are online and why they do what they do (Burby & Atchison, 2007; Kaushik, 2007; Dakela & Seymour, 2008; Kaushik, 2009). The customer behaviour of the online prospective customers and customers has become vital for meeting the Web Analytics objectives (Kaushik, 2007, 2009).

Knowledge Management Systems is referred to as a class of information systems applied to managing organisational knowledge (Alavi & Leidner, 2001; Smuts, Looek, Van der Merwe & Kotzé, 2009). As more expertise is being gained within the team, it is important to implement a knowledge management system in the environment, making use of people's knowledge and technologies such as the 'Wiki'.

The need for a combination of technical and human resources is something information systems projects have in common with knowledge management initiatives (Davenport, De Long, & Beers, 1998; McDermott, 1999).

Contrary to some knowledge management literature (Alavi & Leidner, 2001), that defines knowledge management as identifying and leveraging the collective knowledge to help the organisation to compete; however in the organisation of study knowledge management was not used to assist the organisation to compete. The benefits of knowledge management systems may include competitive intelligence, however in the organisation of study; there was no conscious goal to use knowledge management to compete with other organisations. If that would have happened, it would have been passive. Competitive intelligence is out of scope in this study, it suggested to be explored in further research studies. Web Analytics packages and tools propel the quest for getting more value out of understanding Web sites and the strategies therein for customer acquisition and customer retention. Customer acquisition and customer retention have a direct impact on sales and profitability.

Web Analytics is seen to be beneficial for customer acquisition, customer retention, converting online visitors to repeat visitors, influencing return on investment (ROI), planning and strategising a customer-centric technique for Web site performance (Ballardvale, 2004; Phippen, 2004; Phippen, Sheppard & Furnell, 2004; Peterson, 2004; Sterne, 2004; Kaushik, 2007; Dakela & Seymour, 2008; Kaushik, 2009). As recommended above, Advanced Web Analytics and actionable Web Analytics (Phippen, 2004; Phippen et al., 2004; Burby & Atchison, 2007; Kaushik, 2009) should be adopted and implemented by organisations.

In the centre of business is the customer. Online customer experience is perceived by some authors (Novak, Hoffman & Yung, 2000; Berry, Carbone, Haeckel, 2002; Meyer & Schwager, 2007) as the internal and subjective response (the response may be good, bad or indifferent) customers have to any direct or indirect contact with a company on the Internet. Jeff Bezos, founder and CEO of Amazon.com, one of the Internet's leading online retailers, notes that creating a compelling online customer experience is vital to competitive advantage on the Internet (Novak, Hoffman & Yung, 2000). Initially at the organisation of study there was no customer experience management.

By the end of the study, some customer feedback reports were initiated and they assisted with 'actionable Web Analytics' (Burby & Atchison, 2007). The companies planning to adopt Web Analytics could approach Web Analytics adoption and implementation by considering methods to improved customer experience, especially online.

In the final iteration, the core categories into were classified into seven categories. Web Analytics adoptions problems, Web Analytics implementation problems do not have to be part of the seven categories, because they impact on five of the remaining core categories. Continuous innovation in Web Analytics and Information systems should be integrated in the model. Literature (King, Gurbaxani, Kraemer, McFarlan, Raman & Yap, 1994; Swanson, 1994; Swanson & Ramiller, 1997; Moore & Benbasat, 2001) confirm that information systems constitutes an ongoing process of innovation. Some authors (Swanson, 1994; Swanson & Ramiller, 1997) explain how a collective, cognitive view of new technologies, such as Web Analytics enables success in information systems innovation both within a business unit and across organisations.

Web Analytics adoption and implementation problems are there at various times in the seven classifications and they can be minimised or eradicated completely. So, the Web Analytics adoption and implementation problems are not permanently there; they change. Sometimes other different kinds of Web Analytics adoption and implementation problems may replace minimised or eradicated ones. According to various authors (Ballardvale, 2004; Robertson, 2003), there are a number of key challenges with Web Analytics that should be recognized and accounted for both before and after implementation.

There is an ongoing debate amongst Web Analytics practitioners on whether Web Analytics should form part of Business Intelligence. Other Web Analytics practitioners think that should form part of Management Information systems (MIS).

There are other suggestions from the research respondents of maybe changing the name of Web Analytics to Interactive Analytics, because the online customer interacts with the Web site and behaves in a certain way that is tracked by the Web Analytics package and Web Analytics tools. Comparing the results of the study with the wider research society, it was found that in this research environment, Business Intelligence (BI) is assumed to consist of Web Analytics (WA), Information systems (IS) and Decision Support Systems (DSS). These relationships are illustrated in the diagram below



Figure 4.11: Positioning Web Analytics within DSS

In this study, there are aspects that overlap between Web Analytics and Management Information (MI). The aspects that overlap are Web metrics. There are elements that overlap between Web Analytics and Decision Support Systems (DSS). Those elements include using data and information to make actionable decisions for change management. There have been speculations and debates with regards to the opinions of some industry specialists that Web Analytics may be a subset of business intelligence (Dakela & Seymour, 2008; Spremic *et. al.* 2008; Bose, 2009; Kursan & Mihic, 2010).



For organisations using Web Analytics; it feeds into a wider function of the business which can have a variety of different names including customer insight, management information (MI), management information systems (MIS) or business intelligence (BI). Online data is part of the business intelligence picture and it is therefore increasingly important for companies to pull together and analyze data from different sources (Dakela & Seymour, 2008).

The positioning of the Web Analytics research within IT adoption and within DSS is debatable. Web Analytics as a technology and discipline can be regarded as belonging within DSS, but the thesis discusses Web Analytics from the introduction, adoption and use of WA in an organisational setting. Thus, the research is more aptly positioned in the diffusion and adoption of technology body of knowledge. And the figure below illustrates that.

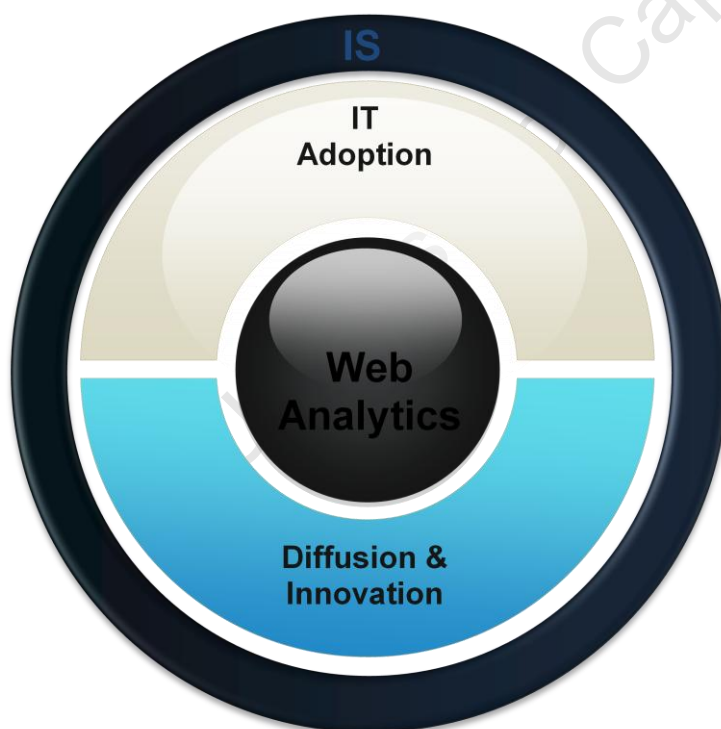


Figure 2.2.1: Positioning Web Analytics within IT Adoption, Diffusion and Innovation

### **5.3 Credibility and dependability**

An audit trail was used to illustrate a systematic manner of evolving iterations. The negative case analysis shows continuous iterations and vigorous analyses. Member checking was done by the senior members of the online team, where they confirmed the research findings of chapter four. They both concurred that the illustration “looked good” and they were pleased with the way the findings were illustrated and interpreted based on the research environment. The section below clearly elaborates on credibility and dependability using the above-mentioned research techniques.

#### **5.3.1 An audit trail**

An audit trail was kept of the open coding, axial coding, selective coding and the links. An audit trail was kept after each cycle of analysis and memos were updated. Substantial evidence of the audit trail is available. Persistent observations and prolonged engagement was one of the credibility procedures used in this study, because the researcher was an observer and later became a participant in the selected organisation. Weekly online team meetings and online steering committee meetings were attended. The researcher was involved in online projects to conduct analysis and recommend potential solutions that may be implemented.

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| CATEGORIES  | SECOND ITERATION   | THIRD ITERATION  | FINAL CATEGORIES   |
|---|--|--|--|
| 1. BI, 2. Advancement, 3. Change, 4. Change Management, 5. Maintenance, 6. Trends, 7. Behaviour, 8. Conversion, 9. Customer journey, 10. Online activity, 11. Online processes, 12. Referrals, 13. Retention, 14. Satisfaction, 15. Web site usability, 16. DSS, 17. Support, 18. Training, 19. Experience analytics / Interactive analytics, 20. Insights Generation, 21. Mobile WA, 22. Customer funnel, 23. Time, 24. Experience, 25. Expertise, 26. Knowledge, 27. Understanding, 28. Misunderstanding, 29. Uncertainty, 30. KPI, 31. Integrated reporting, 32. MI Reports, 33. Function, 34. People, 35. Person, 36. Position, 37. Revenue, 38. WA team, 39. Work, 40. Practice, 41. Problem, 42. Qualitative measure, 43. Qualitative metrics, 44. Benchmark, 45. Benchmarking, 46. Credibility, 47. Quality Assurance, 48. Redundancy, 49. Trust, 50. Quantitative measure, 51. Quantitative metrics, 52. Relationships, 53. Resources, 54. Budget, 55. Budget Constraints, 56. Costs, 57. Sales, 58. Savings, 59. ROI, 60. SA WA (Mobile), 61. SEO, 62. Self-service, 63. Services, 64. Strategy, 65. Success, 66. UK WA, 67. Complexity, 68. Key owner, 69. Objectives, 70. Ownership, 71. WA adoption, 72. WA packages, 73. Web site types, 74. WA benefits, 75. WA value, 76. Business Process, 77. Business Requirements, 78. Communication, 79. Communication content, 80. Framework, 81. Implementation, 82. Infrastructure, 83. Planning, 84. Recommendations, 85. WA framework, 86. WA implementation, 87. WA usage, 88. WA non-usage | 1. Change Management<br><br>2. Customer Journey<br><br>3. DSS<br><br>4. Facilitating Conditions<br><br>5. Innovation<br><br>6. Knowledge<br><br>7. MI Reports<br><br>8. Problems<br><br>9. Qualitative metrics<br><br>10. Quality Assurance<br><br>11. Quantitative metrics<br><br>12. Resources<br><br>13. Revenue<br><br>14. Services rendered<br><br>15. Strategy<br><br>16. Web Analytics (WA)<br><br>17. A adoption<br><br>18. WA implementation<br><br>19. WA benefits | 1. PROGRAMME CHANGE MANAGEMENT (PCM)<br><br>(Strategy, Resources, DSS, Revenue, and Change Management)<br><br>2. MANAGEMENT INFORMATION (MI)<br><br>(MI Reports, Quantitative metrics, Qualitative metrics, and Quality Assurance)<br><br>3. KNOWLEDGE MANAGEMENT (KM)<br><br>(Knowledge, and Facilitating conditions)<br><br>4. WEB ANALYTICS (WA)<br><br>(WA adoption, WA implementation, and WA benefits)<br><br>5. CUSTOMER EXPERIENCE<br><br>(Services rendered, and Customer journey)<br><br>6. PROBLEMS<br><br>(12 problems)<br><br>7. INNOVATION<br><br>(Innovation) | 1. STRATEGIC PROGRAMME CHANGE MANAGEMENT<br><br>2. QUANTITATIVE AND QUALITATIVE MANAGEMENT INFORMATION<br><br>3. INFORMATION AND KNOWLEDGE MANAGEMENT<br><br>4. BENEFICIAL AND ADVANCED WEB ANALYTICS<br><br>5. IMPROVED CUSTOMER EXPERIENCE<br><br>6. INTERNAL & EXTERNAL BUSINESS RELATIONSHIPS<br><br>7. CONTINUOUS INNOVATION IN WEB ANALYTICS AND INFORMATION SYSTEMS |

Figure 5.3.1 An audit trail

### 5.3.2 Member checking

Business owners who are experienced in Web Analytics were requested to evaluate the domain model, the process model together with the twelve guidelines and then comment. Web Analytics experts were also asked to go over the domain model, the process model together with the twelve guidelines and then offer their opinion.

The benefits and the value that the model and the guidelines would add to a novice Web Analytics adopter as suggested by business owners and Web Analytics experts are as follows:

- They will be able to see how their business is performing online. It helps to lay the blocks for their foundation and prepare them for growth (BO2).
- So having the model in the beginning will assist team members to function optimally in their roles in with a similar vision and understanding. For example, everyone will understand the strategy, the defined Web site goal and an overall bigger picture of where the team wants to go (BO2).
- The value of using the models and guidelines is that a company gets to know exactly what they want to get out of Analytics. In Analytics a company may get almost anything. If a company has planned ahead using these models they may recognise exactly which area they want to get most out of it (BO2).
- In an area that is technical and in area where there is no knowledge, it is going to save them some time and money if they have a model to work from (WAE<sub>x1</sub>; WAE<sub>x2</sub>). WAE<sub>x2</sub> further stated that the value of having a model is to cut down time in making decisions, and making lesser mistakes. Novice companies do not have to make some mistakes themselves.
- The model it gives a framework to work from and puts the elements of Web Analytics in context and perspective (WAE<sub>x1</sub>).
- The benefits would be realised as soon as there is one thing companies can find out about their customer using Web Analytics tools (WAE<sub>x3</sub>).

Business owners had the same opinion that the models and the guidelines would assist companies offer better customer experience to their clients. Web Analytics experts agreed that companies would offer a better customer experience to their clients because of applying the models and guidelines.

Business owners agreed that companies would increase sales and become more profitable because of applying the models and guidelines. Web Analytics experts concurred that companies would increase sales and become more profitable because of applying the models and guidelines.

## 5.4 Revisiting the research questions

The two research questions were persistent in the research environment.

### 5.4.1 Primary research question

How do SMEs (Small and medium enterprises) involved in e-commerce approach implementation of Web Analytics? This primary question was addressed through data collection and analyses that were happening iteratively. Chapter three illustrated how the sub-questions were formulated to address the primary question. Chapter four described and explained the data gathered from the research respondents who responded to the primary research question.

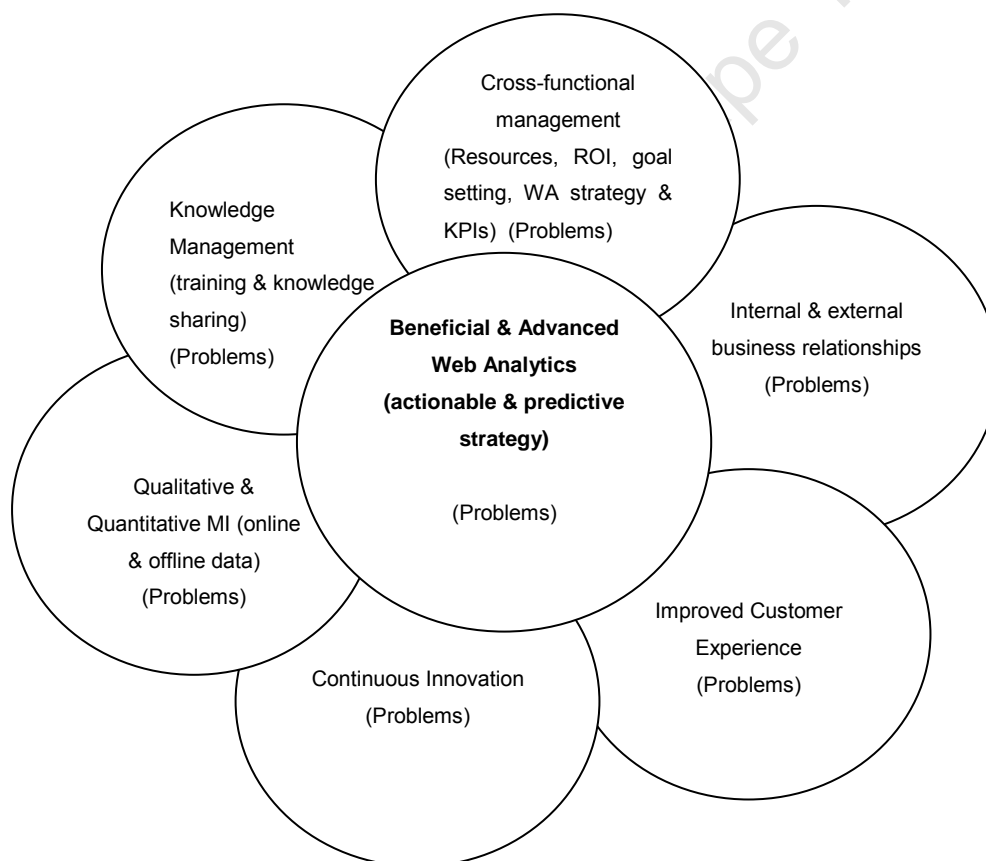


Figure 5.4.1 A simplified version of the proposed model – domain of the model

The results of the data analyses reviewed as research results stood for new knowledge contributed by the thesis. The companies could apply cross-functional management in their environment. This entails having a multi-channel and multi-disciplinary approach in Web Analytics adoption and implementation. The quantitative and qualitative management information is essential for decision making and strategic alignment to the business unit's digital vision. As more expertise is being gained within the team, it is important to implement a knowledge management (KM) system in the environment, making use of people's knowledge and technologies such as the 'Wiki'. Web Analytics packages and tools propel the quest for getting more value out of understanding Web sites and the strategies therein for customer acquisition and customer retention. This has a direct impact on sales and profitability. In the centre of business is the customer. The clients of vendors should approach Web Analytics adoption and implementation by considering methods to improved customer experience, especially online.

The seven core categories were interpreted as follows:

- Cross-functional management
- Quantitative and qualitative management information
- Knowledge management
- Beneficial and advanced Web Analytics
- Improved customer experience
- Continuous Innovation
- Internal and external business relationships

In the final iteration, the core categories were classified into seven categories. So, the Web Analytics adoption and implementation problems are not permanently there; they change. Sometimes other different kinds of Web Analytics adoption and implementation problems may replace minimised or eradicated ones.

### 5.4.2 Secondary research question

What problems do SMEs encounter, and what model would be helpful in successful integration of Web Analytics in the context of their online presence? In responding to the secondary research question, data was gathered from respondents. Then there were grounded action analyses iterations applied in addressing the problems that were identified in the research environment.

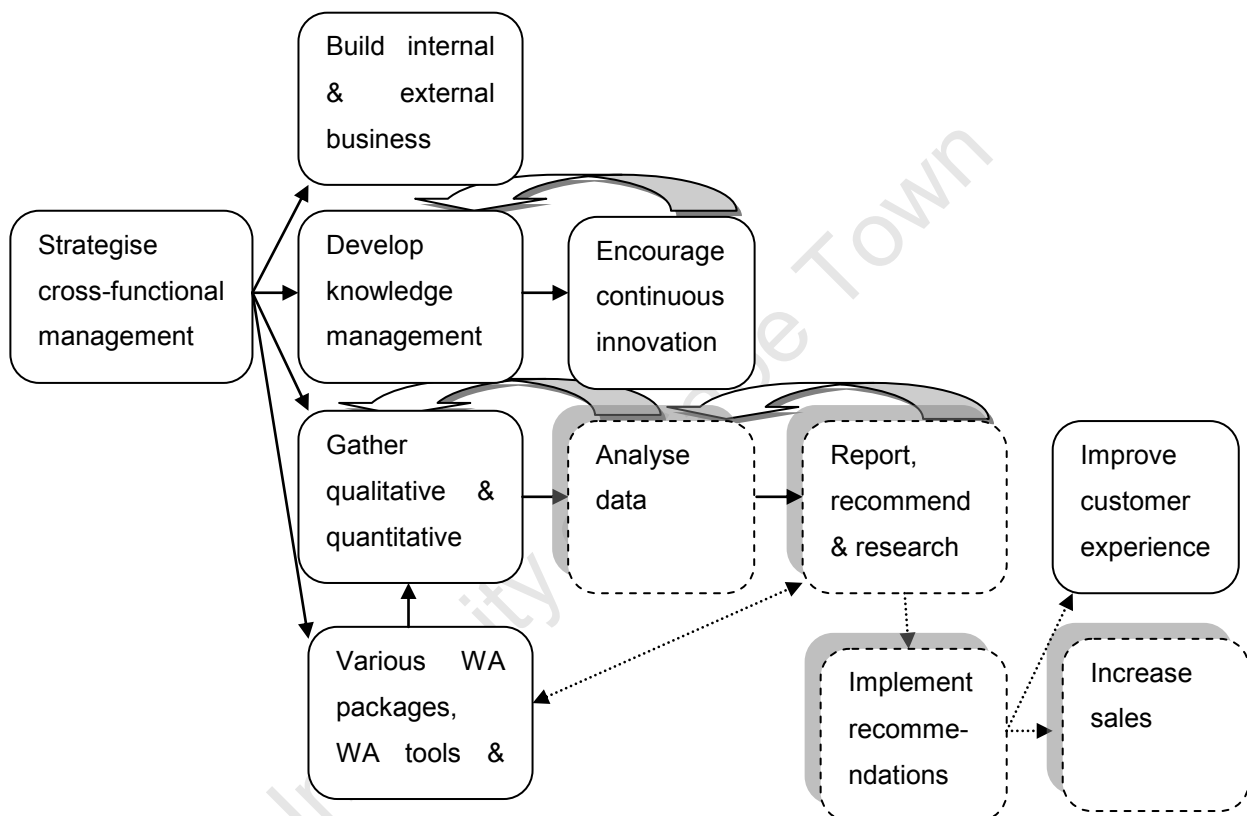


Figure 5.4.2 Web Analytics process model

The twelve guidelines below may be used by large organisations or SMEs considering adopting and implementing Web Analytics. The new knowledge, in terms of responding to the secondary research question, is addressed below:

***Twelve guidelines for adopting and implementing Web Analytics in an e-commerce organisation or a small medium enterprise (SME)***

1. A knowledge management (KM) strategy may minimise the issue of lack of knowledge. A knowledge management strategy may consist of objectives, approach and plan, budget, benefits analysis, people, process, data and technology assessment, measurement and promoting the strategy. An organisational 'Wiki' that is updated regularly and employees who are given incentives may add value to the knowledge management (KM) strategy. A SME would benefit from a knowledge management (KM) strategy.

BO1 highlighted that in his experience, he found that knowledge management (KM) is an active thing. There are few people who will do it except if it is someone else's job. He asked whether people would actually do it, because most communities need to be managed. WAEx1 stated that it is important to have a specific, documented knowledge management strategy for an organisation. It is not enough to suggest that knowledge management (KM) strategy should be there without a concrete plan to support that. BO2 reckons that a 'Wiki' would be a great idea for a sales team as well. He feels that that for a global business you need a 'Wiki' and virtual teams can share organisational knowledge. He further elaborates that a 'Wiki' allows multiple people to communicate and learn from each other's success.

2. A SME may start by adopting and implementing free Web Analytics packages and tools based on their predetermined requirements. A pilot period may be defined to evaluate the Web Analytics solution based on their Web Analytics requirements.



BO2 and WAE3 stated that a novice Web Analytics company should start by using Google Analytics, because it is free and user-friendly; therefore it should be easier to learn Web Analytics aspects when using it. BO2 further said that once a company has grown, they can use commercial Web Analytics tools.

3. Data collection and reporting methods need to be understood by SMEs before a decision is made whether 'to tag' or 'not to tag'. Advantages and disadvantages of different data collection methods need to be evaluated based on the organisation's Web Analytics requirements. Thus an informed decision can be made a suitable data collection method for the company.

WAE1 said that starting with your Web site objectives help guide which tool you are going to use. Each tool has built in data collection and reporting methods.

4. A hosted solution is when data gathered by the Web Analytics package is stored by the vendor. Web Analytics packages that give clients an option not to have a hosted solution are usually commercial Web Analytics packages. When an organisation archives and stores their own data, they are then responsible for their own back-ups. In that case, an organisation should have an agreement about back-up procedures.

WAE3 stated that a hosted solution is risky; however for a novice Web Analytics company that is starting out, it is better than nothing.

5. Consulting a company that is experienced in measuring online conversations in monetary terms is useful in monitoring sales figures and online customer experience. Such a company may assist in fully utilising Web Analytics packages and tools, so that return on investment (ROI) may improve.

BO1 stated that a company needs someone who understands the business yet does not have vested interest in the whole Web Analytics adoption and implementation. A company should compile advantages and disadvantages of doing Web Analytics 'in house' or getting an external company to do it for them.

6. Time management courses are recommended for individuals in the team who are struggling to prioritise learning how to use Web Analytics packages and tools. It is recommended that individuals who need to continue to learn about Web Analytics should schedule at least an hour a day to learn something new.

Business owners and Web Analytics experts agreed that a person who is interested in Web Analytics should make time to learn something new about Web Analytics regularly.

7. The Senior Change/Business Analyst, the Digital Analyst, the IT Architect and senior management should decide on the appropriate Web Analytics solution for their organisation based on the Web Analytics requirements. They can make their agreement based on how the short-listed vendors proposed to address the predetermined Web Analytics requirements.

WAE<sub>3</sub> stated that in my view, a Business Analyst will become a Digital Analyst. He said that South Africa is still catching up with having experience Web Analytics personnel. He further elaborated that currently, it is dependent who is in your company and who has experience. Titles are not necessary; personnel need to understand Web Analytics.

8. It is important to simplify Web Analytics concepts by means of diagrams and by giving examples related to the business in order to clarify them. A key responsible person can draw up simplified reports that are specific to the requestor's business needs.

BO<sub>2</sub> agreed that simplifying Analytics using diagrams is important. Diagrams are a more simplified way of illustrating concepts.

9. Quantitative data can be analysed qualitatively. Relationships can be built between business units that can provide qualitative analysis to supplement the statistics.

BO1 clarified that an organisation should not be interested in absolutes, they should be interested in trends from the data. A company should stick to one system over time about 3 years, so that they may get history and trends. They should be aware that they may not extract the value in the first year – trends are interpreted over a period of time. WAEx3 declared that he think the best way to get qualitative statistics is to create a community portal. When it comes to qualitative measures he thinks that Web Analytics, social media and online games are the best guides to human behaviours. He gives an example of an online game that has features such as a shopping cart model, continuous feedback model and subscription model.

10. Organisations can be aware of different systems that depend on each other and that may have an impact on the functionality of the Web Analytics packages and tools. Senior management and systems experts should ensure that different systems that exist are compatible with each other.

WAEx3 states that a company should want to know what people are thinking when they are using their Web site. A company can get direct feedback from various systems that a company has put in place. The company must understand the bigger picture, they will understand Web Analytics and how it will work for them as a company.

11. To make the most of Web Analytics human resources, manual processes and crucial reports can be automated as much as it is feasible.

WAEx2 suggested that reports be scheduled where necessary to minimise some manual processes.

12. It can be helpful to implement a process where each person requests the reports that they need from a Digital Analyst using a formal application form. Using such a system enables prioritisation and a sign-off step, ensuring that each person has the necessary reports within a negotiated time-frame.

BO2 said that a Digital Analyst would be able to interpret and communicate insights appropriately.

## **5.5 Research contributions**

In this section the research contribution done was evaluated. Theoretical contributions, methodological contributions and practical contributions in the study were described and explained.

### **5.5.1 Theoretical contributions**

In chapter four the relevance and the practicality of the research study was illustrated. The research results with direct relevance for team members of the Online Team in the organisation of study and for the broader community of professionals were illustrated. Theoretical contribution is defined as follows by Locke and Golden-Biddle (1997):

An idea becomes a contribution, then, when it is construed as important by the members of a scholarly community, relative to the accepted knowledge constituted by the field's written work.

There are four types of contributions that can be made by interpretive studies through the construction of qualitative generalisations (Walsham, 1993; Walsham 1995). The contributions are: the development of concepts, the generation of theory, the drawing of specific implications in particular domains of action and contributions of rich insights which are broad insights (broader than the previous three contribution types) (Barrett & Walsham, 2004).

This study claims contribution with regard to the development of concepts for Web Analytics approach to adoption and implementation. The theoretical contribution made in this study is both descriptive and explanatory, to suggest better understanding of e-commerce organisations that have adopted and implemented Web Analytics.

Gaps that exist in Web Analytics frameworks literature have been highlighted and discussed. The intellectual debate regarding contextualising Web Analytics, either in Information Systems, or Internet Marketing continues. There may be another domain that Web Analytics may be positioned in; researchers may continue to contribute to Web Analytics body of knowledge.

### **5.5.2 Methodological contributions**

Grounded action research has not been applied in many studies to test its appropriateness in various adaptations. Grounded action research was used in this study. More literature about grounded action research was added and another pattern for appropriating grounded action research to the body of knowledge.

This method seems to be an ideal approach for studying change in companies. Firstly, grounded theory notation, such as memos and diagrams, is used to symbolise theory-data during the action research cycle. Secondly, grounded theory coding becomes the essence of the evaluating, learning and diagnosis phases of action research. The observations regarding these phases must be captured for open coding.

Grounded action research was selected targeting key stakeholders in an online team within an organisation. The researcher participated in a project of changing one Web Analytics tool to another in a selected organisation.

### **5.5.3 Practical contributions**

The power of the Internet has yet to reach much of the South African economy, but the researcher is working on ways to help SA's small, and medium enterprises (SMEs) understand the Web's potential – and how they can use it and Web Analytics as a tool to build the future, rather than just to record the past. The research study, focusing on Web Analytics, aims at providing business owners with qualitative and quantitative metrics with which they can track the online activity of their customers, and identify potential new customers through online marketing activity and social media sites.

The researcher is also determined to educate business people to understand and be able to use the free Web Analytics tools that are out there – so many small companies pay unnecessary fees to agencies for services that they could find online at no charge. It is about educating small businesses to use the Internet to the best advantage. While the bulk of the South African population may not have access to personal computers, the high penetration of mobile phones in the SA society was pointed out. It is also important for business owners to optimise their online offerings to be suitable for access from cellular phones and other mobile devices.

It is important to note the potential global impact of the outcomes of this work. Small businesses have been identified as the key drivers for economic recovery, and the Internet has the potential to unlock information and business tools for them. While the researcher will be publishing my findings in the academic realm, the private sector and media are being approached to reveal these research findings to the market, so that business owners can make use of these tools. The online world adapts and changes so quickly, that it is important to spread the information as it comes to light.

The domain model is descriptive and explanatory of the context of the study. It clarifies how companies that have adopted Web Analytics deal with problems, and how the team members deal with cross-functional change management within their roles in an e-commerce context. The process model has been found useful by business owners and Web Analytics experts, especially for companies who are novices in Web Analytics strategies. The guidelines are portable in order to be tested in other similar (or even different) environments.

In Appendix A, a list of possible Web Analytics vendors are highlighted, including key decision criteria that may be used in a project for selecting an appropriate Web Analytics vendor. It was found that the example of the high level business requirement, in Appendix F may be adapted for companies who do not have experience in compiling their own high level requirements for a Web Analytics solution. This is a useful example for a guideline or a starting point in practice, for adopting and implementing Web Analytics.

#### **5.5.4 Applicability of models**

The development of innovative modelling approaches encourages practical use of models in new environments (Leeftang & Wittink, 2000). Further, the complexity of real-world decisions often makes it hard to identify the role attributable to models when strategic decisions are made. In Web Analytics, there is an increasing demand for models and frameworks that are suitable in other contexts. Model builders are encouraged to identify structure and specification of models that meet the objective of applicability in new contexts. Some authors (Leeftand & Wittink, 2000) anticipate collaboration between academics and industry specialists. Information Systems academics are increasingly interested in production of relevant research, partly due to growth in executive research, while industry specialists are willing to provide data because they recognize the benefit of sophisticated analyses academics are capable of (Leeftand & Wittink, 2000). Therefore, there is a basis for cooperation and the interaction will stimulate further development of implementable and transferable models.

The study was applied in an organisation with a virtual team, with offices in the United Kingdom and in South Africa. The generalisability was conducted in South Africa, however the South African companies that participated in the second case and in generalisability had international offices in other countries as well.

#### **5.6 Assessment of the research**

There is one assessment of the research that is applied in this study. The evaluative criteria are proposed by Klein and Myers (1999).

##### **5.6.1 Evaluative criteria proposed by Klein and Myers**

A set of principles to assess interpretive studies in Information systems (Klein & Myers, 1999) has been used in this study. These principles are briefly discussed below.

The research method used in this study is grounded action research. The first research site is a small, medium enterprise (SME), UK-based primary medical insurance company. The company is also a multinational with teams and offices both in the United Kingdom and in South Africa. The theoretical focus is adoption and implementation of emerging technologies in Information systems. The second research site is a large financial services provider in South Africa.

*Principle 1: The principle of human understanding and comprehending the meaning of portions and completeness that the portions form*

This principle implies that people gain comprehension by thinking through, iteratively, the meaning of portions and the completeness that the portions form. This principle is the basis of other six principles. Each of the next six principles directed this research to reveal particular parts of the grounded action research, none of which, when taken in isolation, is essentially whole.

Each principle assisted the researcher to realise important aspects of the grounded action research that add value to the comprehension of the entire study. As the comprehension of the portions became more understandable, the aspects themselves assisted in the discovery of meaning of the entire study.

In this study the researcher moved back and forth between various interpretations of the field study material, which guided this research in the appropriation of the following six principles. The iterations made were led by the objective to fill any gaps in the field study material that might have persisted. The researcher continued with the iterations until the parts of the whole made sense to me. Klein and Myers' (1999) principle of the hermeneutic circle was used in this study.

*Principle 2: The principle of thinking critically about the research environment*

This requires critical thinking of the social and historic conditions of the research environment, so that the readers of this study can understand how the depicted view came about. This study gives a multi-level analysis of the UK-based primary medical insurance merger with a South African company. It also gives a brief history of the company.



This study adds value to the historic forces affecting the organisation being studied. This study gives analysis of the South African based financial services provider. The respondents of both companies, including business owners and Web Analytics experts were seen as history makers. Klein and Myers' (1999) principle of contextualisation was used.

*Principle 3: The principle of data transfer from respondents to the researcher*

This requires critical thinking on how the data was passed from the research participants to the researcher. In this study Klein and Myers' (1999) principle of interaction was followed between the researcher and subjects because the researcher ended up as being a participating member of the respondents' team for a year due to the research method selected for the study. There were many opportunities of social interactions with the respondents. Data collection impacted favourably on data interpretation because there were opportunities of critical reflection of the social background through interaction. Activities such as informal contacts, interviews, requests for specific documents and conversations affected how the respondents presented the information, because there was a level of trust after having been part of the team. This also impacted the quality of data received.

*Principle 4: Thinking critically about research environment in abstract categories and focusing on theoretical and general ideas*

This requires relating aspects exposed by data interpretation through appropriation of principles (one and two) of theoretical ideas that describe people's social action. Some general principles of grounded action research were considered and components of Information systems strategy such as content, context and process were generalised. The responses and the meanings of the responses from the research respondents were crucial for interpretation. The fact that the study was conducted in a multi-national organisation in the primary medical insurance sector was important for interpretation. The iterative research process added more value in clarifying responses from the research respondents. Other-settings generalisability was conducted in another case organisation. Klein and Myers' (1999) principle of abstraction and generalisation was used.

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*Principle 5: The principle of own influential preconceptions*

This requires insights to my preconceptions directing the research design and research results with consequent iterations. The researcher states the type of interpretivism preferred and its philosophical origins. In this study preconceptions were explicitly discussed which guided the research design, with the data that emerged through the research process. The historical intellectual basis of the research was informed by work experience as a Web Analyst/Digital Analyst and literature sensitivity was ensured. Klein and Myers' (1999) principle of dialogical reasoning was used.

*Principle 6: The principle of various viewpoints*

This requires insights into different points of view among the respondents of the research environment. In this study different opinions by the respondents are shown, for example, problem twelve of this study in the previous chapter, which was a plethora of reports/no reports conflicts. The scheduled periodic reports were distributed to relevant stakeholders. There was one weekly report and one monthly report from the online team. The complaint about the unavailability of reports had to be managed and it had to be dealt with directly with the Web Analytics stakeholder who made that claim.

The expectations of the Management Information requestors had to be managed properly. It was interesting for me to note that the same team of stakeholders had contrasting views regarding the availability and unavailability of reports. There were also contrasting views with regard to accessibility and inaccessibility of the Management Information reports. Klein and Myers' (1999) principle of multiple interpretations was used.

*Principle 7: The principle of critically questioning the respondents' narratives*

This requires insights to possible "false preconceptions" in the narratives gathered from the respondents. An interpretive perspective was taken and that probed the respondents for deeper meanings of their responses. None of the viewpoints were taken at face value.

The respondents were mostly honest in their responses, because we were part of the same team. Opportunities to rephrase the inquiries and get clearer responses were available. Where there were misunderstandings, there were opportunities to get some clarity. There was limited use of Klein and Myers' (1999) principle of suspicion.

Data analysis discovered the significance of seven aspects; cross-functional management, quantitative and qualitative management information, knowledge management, continuous innovation, internal and external business relationships, beneficial and advanced Web Analytics, and improved customer experience. The following section highlights the limitations of this study.

### **5.7 Limitation of the research**

Information systems is an area of study that advances fairly rapidly. During the course of this study, Web Analytics continued evolving and it was further categorised into off-site Web Analytics and on-site Web Analytics. Off-site Web Analytics entails benchmarking Web site's prospects, online presence and discussions on the entire World Wide Web. On-site Web Analytics refers to a prospective customer and a customer's experience of the Web site.

This study investigated on-site Web Analytics; even though some aspects of off-site Web Analytics were done using Hitwise (a benchmarking tool, which has been recently bought by Experian) for the organisation under study, the researcher chose not to report on them, because that was out of the scope of this study.

A team within the same location and a virtual team have fundamental differences. The study focused on a virtual team and not a traditional team, because of the research environment that granted the researcher access. The study could have been conducted within a traditional team. Although the outcomes may be similar, it would be interesting to confirm this.

Grounded theory has diversified since its inception around 1967. In chapter three, there is an intellectual debate on Glaserian and Straussian paradigms of grounded theory. The study was limited to Strauss' approach to grounded theory. Glaser's approach to grounded theory opts for: the less difficult explanation for an observation, an enclosing context where the explanation is associated, and an explanation may be changed when new, relevant data is compared to existing data (Heath, 2003). Web Analytics has some vital quantitative metrics such as sales figures that may need to be incorporated in a grounded theory study; it may be worthwhile to apply Glaser's (2008) study on conducting quantitative grounded theory. A comparison of the two approaches to this study would have results that may be worth reviewing. The qualitative interviews that were conducted had to be made shorter than the researcher preferred, because the organisation for the study is a small medium enterprise (SME) and the participant's time was limited. Even though the first interview was longer than others, the online manager expressed the tight schedules of the online team. The researcher also observed that the organisation of the study is fast-paced and there is a high level of pressure on the online team.

The limited edition of HyperRESEARCH is limited to seven cases and 75 codes, with no more than 50 code references per case. There are no other limitations and no timeouts: one can use the limited edition to create and save files, print, and use HyperRESEARCH features. If one has licensed HyperRESEARCH, the limits are removed and one can create more cases, codes, and code references. More in-depth analysis could have been done with the full HyperRESEARCH version. Financial limitations and time constraints were challenges in obtaining the full HyperRESEARCH version, because the software would have to be bought and then the user would have to go through the entire user manual before actually using it. It could have been useful to include some of the weekly Online MI steering committee meeting reports that were produced by the research at the beginning of the intervention and then also at the end of the intervention and measure the sales impact. Permission was not granted to the researcher to publish the values of the metrics shown in Appendix C. It could have been useful to take the domain model, the process model and the twelve guidelines to another organisation and measure sales impact and the improvement of customer experience over a substantial amount of time.

This study did not discuss mobile Analytics, eye-ball tracking technologies in Analytics and using Analytics to track behaviour in gaming contexts. Some of these topics are recommended as opportunities for further research in the next section.

### **5.8 Opportunities for further research**

Mobile Analytics studies behaviour of mobile prospective customers and mobile customers' journey on the Web site in a similar manner to the traditional Web Analytics. Mobile Web Analytics would be such an interesting area to inspect, because of the global move towards mobile Internet usage, especially for social networking and business. Smart phones have played a role for digital consumers to have social and business lifestyles interwoven.

Real time eye-ball tracking using low resolution Web camera may be another possible opportunity for research. There are algorithms for detecting the eye-ball and algorithms for tracking the eye-ball in Analytics. These may be interesting to research further. Another area of interest that may be inspected is using online gaming environments to learn more about improving online customer experience.

Further research for this study could include an in-depth comparison of Web Analytics in the UK and SA, because the virtual team operated in two countries that may have different Internet policies, practices, problems and different perceptions of Web Analytics. Further research would also include the feasibility of appropriating the developed model for another country and/or another industry. Industries that could benefit from Web Analytics include telecommunications, education, legal and creative industries.

## 5.9 Summary

The synopsis of the previous four chapters to reflect on the build-up to this chapter, the final chapter was reviewed. An in-depth discussion and debate is in the thesis summary. Credibility and dependability consisted of an audit trail, generalisability and member checking. The two research questions emerged as the grounded action research had started in a research environment while literature sensitivity was applied in parallel. These two questions were persistent in the research environment. The research contribution done was reviewed. Theoretical contributions, methodological contributions and practical contributions in the study were described and explained. The criteria proposed by Klein and Myers (1999) were evaluated in this study. Innovation in Web Analytics may be described and explored further. Such aspects were discussed in the limitations of the research and opportunities for further research which concluded the thesis.

University of Cape Town

## 6 Appendices

### APPENDIX A-1: Vendor Listing (Lund, 2006) – Table 1: Web Analytics products

|    | Company                                 | Comments                                  | Product Name(s)               | Web Site URL  |
|----|---|---|-------------------------------|---|
| 1  | 24/7 Search                             | Search Marketing tracking                 | 24/7 Search                   | <a href="http://www.247search.com/Web-Analytics.html">http://www.247search.com/Web-Analytics.html</a>                             |
| 2  | 24-7 Real Media, Inc.                   |   | Insight XE                    | <a href="http://www.247realmedia.com/products/webanalytics.html">http://www.247realmedia.com/products/webanalytics.html</a>       |
| 3  | Aboavista                               |   | Iris Metrics                  | <a href="http://www.irismetrics.com/">http://www.irismetrics.com/</a>   |
| 4  | Acclivity Marketing                     | uses indextools.com                       |                               | <a href="http://www.acclivitymarketing.com/ptracking.htm">http://www.acclivitymarketing.com/ptracking.htm</a>                     |
| 5  | Akamai                                  |   | Site Wise                     | <a href="http://www.akamai.com/en/html/services/web_analytics.html">http://www.akamai.com/en/html/services/web_analytics.html</a> |
| 6  | Analog                                  | Popular, powerful, free log file analysis |                               | <a href="http://www.analog.cx">http://www.analog.cx</a>   |
| 7  | Atlas DMT/Net Conversions               |   | True Usability                | <a href="http://www.netconversions.com/">http://www.netconversions.com/</a>   |
| 8  | AuriQ Systems                           |   | Rtmetrics                     | <a href="http://www.auriq.com/">http://www.auriq.com/</a>   |
| 9  | AWstats                                 |   |                               | <a href="http://awstats.sourceforge.net/">http://awstats.sourceforge.net/</a>   |
| 10 | Bluestreak                              |   | IonStream Marketing Analytics | <a href="http://www.bluestreak.com/">http://www.bluestreak.com/</a>   |
| 11 | Boutelle.com, Inc.                      |   | Wusage                        | <a href="http://www.boutell.com/wusage/">http://www.boutell.com/wusage/</a>   |
| 12 | Burning Door Syndication Services, Inc. | Analysis of RSS feeds                     |                               | <a href="http://www.feedburner.com/fb/a/home">http://www.feedburner.com/fb/a/home</a>   |
| 13 | Buystream                               | Acquired by Watchfire                     |                               | <a href="http://www.buystream.com/">http://www.buystream.com/</a>   |
| 14 | Casselware, Inc.                        |   | Website Reporter              | <a href="http://www.cgiadmin.com/scripts/wr/">http://www.cgiadmin.com/scripts/wr/</a>   |
| 15 | Clickalyzer                             | page tagging, ASP                         |                               | <a href="http://www.clickalyzer.com/">http://www.clickalyzer.com/</a>   |
| 16 | ClickFox                                |   |                               | <a href="http://www.clickfox.com/">http://www.clickfox.com/</a>   |
| 17 | ClickLab                                | Version 2 - click fraud detection         |                               | <a href="http://www.clicklab.com/">http://www.clicklab.com/</a>   |
| 18 | Clickstream                             | novel data collection                     | Clickstream Data Collection   | <a href="http://www.clickstream.com/products.php">http://www.clickstream.com/products.php</a>                                     |
| 19 | ClickTracks Analytics, Inc.             | Powerful clickthru visualization          |                               | <a href="http://www.clicktracks.com">http://www.clicktracks.com</a>   |
| 20 | comScore Networks, Inc.                 | Panel based measurement                   | Media Metrix                  | <a href="http://www.comscore.com/">http://www.comscore.com/</a>   |
| 21 | Coremetrics                             |   |                               | <a href="http://www.coremetrics.com">http://www.coremetrics.com</a>   |
| 22 | Counter.com                             | part of SuperStats                        |                               | <a href="http://counter.superstats.com">http://counter.superstats.com</a>   |
| 23 | D Stat                                  |   |                               | <a href="http://www.dstat.com/en/">http://www.dstat.com/en/</a>   |
| 24 | Databeacon                              |   |                               | <a href="http://www.databeacon.com">http://www.databeacon.com</a>   |
| 25 | Datanautics                             | formerly Accrue Software                  | Insight, G2                   | <a href="http://www.datanautics.com">http://www.datanautics.com</a>   |
| 26 | DeepMetrix                              |   | LiveStats                     | <a href="http://www.deepmetrix.com/">http://www.deepmetrix.com/</a>   |

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|----|------------------------|--|---------------------|---|
| 27 | DoubleClick            | ad serving, moving into analytics          |                     | <a href="http://www.doubleclick.com/us/products/marketing_analytics/">http://www.doubleclick.com/us/products/marketing_analytics/</a>   |
| 28 | EasyStat               |  |                     | <a href="http://www.easystat.net/">http://www.easystat.net/</a>   |
| 29 | eCommStats             | ASP, page tagging                          |                     | <a href="http://www.ecommstats.com/">http://www.ecommstats.com/</a>   |
| 30 | Elytics                |  | Analysis Suite      | <a href="http://www.elytics.com/index.html">http://www.elytics.com/index.html</a>   |
| 31 | EngineReady, Inc.      | PPC tracking                               | Conversion Analyst  | <a href="http://www.engineready.com/">http://www.engineready.com/</a>   |
| 32 | eXTReMe Tracker        |  |                     | <a href="http://extreme-dm.com/tracking/">http://extreme-dm.com/tracking/</a>   |
| 33 | Fireclick              |  | Netflame            | <a href="http://www.fireclick.com/">http://www.fireclick.com/</a>   |
| 34 | FXweb Web Technologies |  | WebTracker          | <a href="http://www.fxweb.com/tracker/">http://www.fxweb.com/tracker/</a>   |
| 35 | Greenlight             |  | TrafficLight        | <a href="http://www.greenlight.co.uk/web-analytics/">http://www.greenlight.co.uk/web-analytics/</a>   |
| 36 | Harvest Solutions      | ASP, page tagging                          |                     | <a href="http://www.harvestsolutions.com">http://www.harvestsolutions.com</a>   |
| 37 | Hitwise                | ISP based benchmarking data                |                     | <a href="http://www.hitwise.com/">http://www.hitwise.com/</a>   |
| 38 | Hotscripts.com         | free and shareware tools                   |                     | <a href="http://www.hotscripts.com/cgi-bin/search.cgi?bool=AND&amp;query=web+traffic+analysis&amp;category=all">http://www.hotscripts.com/cgi-bin/search.cgi?bool=AND&amp;query=web+traffic+analysis&amp;category=all</a> |
| 39 | IBM                    |  | SurfAid             | <a href="http://surfaid.dfw.ibm.com/web/home/index.html">http://surfaid.dfw.ibm.com/web/home/index.html</a>   |
| 40 | ICEtracks SA (Pty) Ltd |  | ICEtracks           | <a href="http://www.icetracks.com/">http://www.icetracks.com/</a>   |
| 41 | IDfr                   |  | Wysistat 5.0        | <a href="http://www.wysistat.biz/">http://www.wysistat.biz/</a>   |
| 42 | iHotCounter            | the name says it all; free counter tagging |                     | <a href="http://www.ihitcounter.com/">http://www.ihitcounter.com/</a>   |
| 43 | Implix                 | ad tracking tools                          | HyperTracker        | <a href="http://www.hypertracker.com/">http://www.hypertracker.com/</a>   |
| 44 | indextools.com         |  |                     | <a href="http://www.indextools.com/">http://www.indextools.com/</a>   |
| 45 | InfoFirst, Inc.        |  | NetAudit            | <a href="http://www.netauditnow.com/">http://www.netauditnow.com/</a>   |
| 46 | Informatica            |  | eSite               | <a href="http://www.informatica.com/news/press%2breleases/2001/05292001.htm">http://www.informatica.com/news/press%2breleases/2001/05292001.htm</a>   |
| 47 | Instadia               |  | ClientStep          | <a href="http://corporate.instadia.net/">http://corporate.instadia.net/</a>   |
| 48 | Intellitracker         |  |                     | <a href="http://www.intellitracker.com/">http://www.intellitracker.com/</a>   |
| 49 | iperceptions           | User experience tools                      | webValidator        | <a href="http://www.iperceptions.com/">http://www.iperceptions.com/</a>   |
| 50 | iWebTrack.com          |  | iWebTrack           | <a href="http://www.iwebtrack.com/">http://www.iwebtrack.com/</a>   |
| 51 | Ixcite Visual Software |  | Ixcite Web Analyzer | <a href="http://www.ixacta.com/products/ixsite/">http://www.ixacta.com/products/ixsite/</a>   |
| 52 | Keylime Software       | purchased by Overture                      |                     | <a href="http://www.limesoft.com">http://www.limesoft.com</a>   |
| 53 | Kowalick, Inc          |  | MR2                 | <a href="http://www.kowalick.com/">http://www.kowalick.com/</a>   |
| 54 | Likno Software Inc.    |  | SiteSpotting        | <a href="http://www.sitespotting.com/">http://www.sitespotting.com/</a>   |
| 55 | Loyalty Matrix         |  | MatrixOptimizer     | <a href="http://www.loyaltymatrix.com/">http://www.loyaltymatrix.com/</a>   |
| 56 | Mach5 Enterprises      |  | Mach5 Analyzer      | <a href="http://www.mach5.com/">http://www.mach5.com/</a>   |
| 57 | Manticore Technology   | page tagging                               |                     | <a href="http://www.manticoretechnology.com">http://www.manticoretechnology.com</a>   |
| 58 | Maxamine               | business intelligence software             |                     | <a href="http://www.maxamine.com/">http://www.maxamine.com/</a>   |
| 59 | Maximized Software     |  | FlashStats          | <a href="http://www.maximized.com/products/flashstats/">http://www.maximized.com/products/flashstats/</a>   |



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|----|-----------------------------|---------------------------------|-----------------------|---|
| 60 | MetriServe                  | web analytics service           |                       | <a href="http://www.metriserve.com/">http://www.metriserve.com/</a>   |
| 61 | MINDLAB GmbH                |                                 | Web Mining software   | <a href="http://www.mindlab.de">http://www.mindlab.de</a>   |
| 62 | MondoSoft                   |                                 |                       | <a href="http://www.mondosoft.com/">http://www.mondosoft.com/</a>   |
| 63 | Moniforce                   | also provides performance data  | webSensor, webAlarm   | <a href="http://www.moniforce.com">http://www.moniforce.com</a>   |
| 64 | Monocle Solutions           |                                 | WebLog Manager        | <a href="http://www.monocle-solutions.com/weblog/home.shtml">http://www.monocle-solutions.com/weblog/home.shtml</a>                     |
| 65 | myComputer                  | see also Zeducorp               | SuperStats            | <a href="http://www.mycomputer.com/index2.html">http://www.mycomputer.com/index2.html</a>   |
| 66 | Nedstat                     |                                 |                       | <a href="http://www.nedstat.com">http://www.nedstat.com</a>   |
| 67 | Net Applications            |                                 | HitsLink              | <a href="http://www.hitslink.com">http://www.hitslink.com</a>   |
| 68 | NetRatings, Inc.            | Panel based measurement         | Nielson/NetRating s   | <a href="http://www.nielsen-netratings.com/">http://www.nielsen-netratings.com/</a>   |
| 69 | NetIQ                       | log analysis and page tagging   | WebTrends             | <a href="http://www.netiq.com">http://www.netiq.com</a>   |
| 70 | Offermatica                 | testing and optimization tools  |                       | <a href="http://www.offermatica.com">http://www.offermatica.com</a>   |
| 71 | Omniture                    | page tagging                    | SiteCatalyst          | <a href="http://www.omniture.com">http://www.omniture.com</a>   |
| 72 | OneStat                     |                                 |                       | <a href="http://www.onestat.co.uk/">http://www.onestat.co.uk/</a>   |
| 73 | OpenTracker                 | page tagging                    |                       | <a href="http://www.opentracker.net/">http://www.opentracker.net/</a>   |
| 74 | Opinion Labs                | behavior/attitudinal assessment | OnlineOpinion         | <a href="http://www.opinionlab.com">http://www.opinionlab.com</a>   |
| 75 | Optimal IQ                  | private label web tools         |                       | <a href="http://optimaliq.com/">http://optimaliq.com/</a>   |
| 76 | Overture Services, Inc.     |                                 | Marketing Console     | <a href="http://www.content.overture.com/d/USm/ays/mc.jhtml">http://www.content.overture.com/d/USm/ays/mc.jhtml</a>                     |
| 77 | Owl Marketing               | ad tracking tools               | AdWatch               | <a href="http://www.owlmarketing.com./">http://www.owlmarketing.com./</a>   |
| 78 | Performance Drivers         |                                 | LifeLine              | <a href="http://www.performancedrivers.com/">http://www.performancedrivers.com/</a>   |
| 79 | Pilot Software              |                                 | Pilot HitList         | <a href="http://www.pilotsoftware.com/products_solutions/hitlist.html">http://www.pilotsoftware.com/products_solutions/hitlist.html</a> |
| 80 | Portent Interactive         |                                 |                       | <a href="http://www.portentinteractive.com/tools_webanalytics.htm">http://www.portentinteractive.com/tools_webanalytics.htm</a>         |
| 81 | Quest Software              |                                 | Funnel Web            | <a href="http://www.quest.com/funnel_web/analyzer/">http://www.quest.com/funnel_web/analyzer/</a>                                       |
| 82 | Radiocom Ltd                | SEO and some traffic analysis   | WebSite CEO           | <a href="http://www.websiteceo.com/index.htm">http://www.websiteceo.com/index.htm</a>   |
| 83 | Realtracker                 |                                 |                       | <a href="http://www.realtracker.com">http://www.realtracker.com</a>   |
| 84 | RedEye                      |                                 |                       | <a href="http://www.redeye.com/">http://www.redeye.com/</a>   |
| 85 | RedSheriff                  | acquired by NetRatings, Inc.    | Customer Intelligence | <a href="http://www.redsheriff.com/us/content/home.html">http://www.redsheriff.com/us/content/home.html</a>                             |
| 86 | ReportMagic                 | works with Analog               |                       | <a href="http://reportmagic.org/">http://reportmagic.org/</a>   |
| 87 | Revenue Science             | formerly digiMine               |                       | <a href="http://www.revenuescience.com">http://www.revenuescience.com</a>   |
| 88 | Roicast                     | merged with SteelTorch          |                       | <a href="http://www.steeltorch.com">http://www.steeltorch.com</a>   |
| 89 | S&H Computing Systems, Inc. |                                 | LogRover              | <a href="http://www.logrover.com/">http://www.logrover.com/</a>   |
| 90 | SageMetrics                 |                                 | SageAnalyst           | <a href="http://www.sagemetrics.com/index.asp">http://www.sagemetrics.com/index.asp</a>   |
| 91 | Sane Solutions              | log file analysis               | Net Tracker           | <a href="http://www.sane.com/">http://www.sane.com/</a>   |
| 92 | SAS                         |                                 | Intellivisor          | <a href="http://www.sas.com/solutions/intellivisor/">http://www.sas.com/solutions/intellivisor/</a>                                     |
| 93 | Sawmill                     |                                 |                       | <a href="http://www.sawmill.net/">http://www.sawmill.net/</a>   |

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|-----|-------------------------------|---|-------------------------------|---|
| 94  | Site Intelligence             |   | VBIS                          | <a href="http://www.site-intelligence.co.uk">http://www.site-intelligence.co.uk</a>   |
| 95  | Site Meter                    | free, counter tracking                                    |                               | <a href="http://www.sitemeter.com/">http://www.sitemeter.com/</a>   |
| 96  | Smart Plans LLC               |   | Profit Smart DM               | <a href="http://www.profitmartdm.com/">http://www.profitmartdm.com/</a>   |
| 97  | speed-trap Ltd                |   | Propohet & OV Prophet         | <a href="http://www.speed-trap.com/">http://www.speed-trap.com/</a>   |
| 98  | SPSS                          |   | NetGenesis                    | <a href="http://www.customercentricsolutions.com/applications/webanalysis/">http://www.customercentricsolutions.com/applications/webanalysis/</a> |
| 99  | StatCounter                   | free tracking tool  |                               | <a href="http://www.statcounter.com/">http://www.statcounter.com/</a>   |
| 100 | Stats4You.com                 |   |                               | <a href="http://www.stats4you.com/">http://www.stats4you.com/</a>   |
| 101 | StatSoft, Inc.                |   | WebStatistica                 | <a href="http://www.statsoftinc.com/webserver.html">http://www.statsoftinc.com/webserver.html</a>   |
| 102 | SteelTorch Software, Inc.     |   | Caliper                       | <a href="http://www.steeltorch.com/">http://www.steeltorch.com/</a>   |
| 103 | Summary Pro                   |   |                               | <a href="http://www.summary.net/">http://www.summary.net/</a>   |
| 104 | Surfstats                     |   |                               | <a href="http://www.surfstats.com">http://www.surfstats.com</a>   |
| 105 | Tenmiles Corporation          | log processing; built with PHP and MySQL                  | LiveMon                       | <a href="http://www.tenmiles.com/livemon/">http://www.tenmiles.com/livemon/</a>   |
| 106 | Think Business Services Ltd   | page tagging, ASP   | InSite                        | <a href="http://www.thinkmetrics.com/tour.php">http://www.thinkmetrics.com/tour.php</a>   |
| 107 | Touch Clarity Ltd.            |   | iO Enterprise Web Analytics   | <a href="http://www.touchclarity.com">http://www.touchclarity.com</a>   |
| 108 | TraceWorks                    |   | StatLynx                      | <a href="http://www.traceworks.com">http://www.traceworks.com</a>   |
| 109 | Unifact Corporation           | evolution of BI analytics                                 | UniViz Analytics              | <a href="http://www.unifact.com/index.php?REF=0016">http://www.unifact.com/index.php?REF=0016</a>   |
| 110 | Urchin Software               |   | Urchin 5                      | <a href="http://www.urchin.com/">http://www.urchin.com/</a>   |
| 111 | Viewmark                      |   | ViewMetrix 3.0                | <a href="http://www.viewmark.com/index.cgi?CONTENT_ID=5">http://www.viewmark.com/index.cgi?CONTENT_ID=5</a>                                       |
| 112 | Vincera                       |   | Sales Alert for User Activity | <a href="http://www.vincera.com/home/home.html">http://www.vincera.com/home/home.html</a>   |
| 113 | VisitorLogs.com               |   |                               | <a href="http://www.visitorlogs.com/index.htm">http://www.visitorlogs.com/index.htm</a>   |
| 114 | Visual Insights               |   |                               | <a href="http://www.visualinsights.co.uk">http://www.visualinsights.co.uk</a>   |
| 115 | Visual Sciences               | All collection types, powerful analysis and visualization | Visual Site                   | <a href="http://www.visualsciences.com">http://www.visualsciences.com</a>   |
| 116 | Vividence                     | Panel based measurement                                   | Vividence XMS                 | <a href="http://www.vividence.com/">http://www.vividence.com/</a>   |
| 117 | W. Moore & Co.                | ASP, page tagging starting at \$9.95 a month              | WebStats Gold                 | <a href="http://www.webstatgold.com/">http://www.webstatgold.com/</a>   |
| 118 | Watchfire                     | purchased Buystream                                       | WebXM                         | <a href="http://www.watchfire.com/">http://www.watchfire.com/</a>   |
| 119 | WatchWise Inc.                |   | WatchWise                     | <a href="http://www.watchwise.com/">http://www.watchwise.com/</a>   |
| 120 | Web Site Traffic Report, Inc. |   | Web Site Traffic Report, WSTR | <a href="http://www.websitetrafficreport.com/">http://www.websitetrafficreport.com/</a>   |
| 121 | WebAbacus                     |   |                               | <a href="http://www.webabacus.com/">http://www.webabacus.com/</a>   |
| 122 | Webalizer                     |   |                               | <a href="http://www.webalizer.com/">http://www.webalizer.com/</a>   |
| 123 | WebCriteria                   | acquired by Coremetrics                                   |                               | <a href="http://www.coremetrics.com">http://www.coremetrics.com</a>   |
| 124 | webHancer                     |   | X-Path Web Analytics          | <a href="http://www.webhancer.com">http://www.webhancer.com</a>   |
| 125 | WebMetrics                    |   | HitAnalyzer                   | <a href="http://webmetrics.com">http://webmetrics.com</a>   |

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| 126 | Websidestory Inc.        |  | HitBox. HBX     | <a href="http://www.websidestory.com/">http://www.websidestory.com/</a>   |
| 127 | WebtraffIQ               |  | WebtraffIQ      | <a href="http://www.webtraffiq.com/">http://www.webtraffiq.com/</a>   |
| 128 | WhiteCross Systems       |  |                 | <a href="http://www.whitecross.com">http://www.whitecross.com</a>   |
| 129 | WiredMinds Inc.          | visitor tracking and availability data | WiredMinds      | <a href="http://www.wiredminds.com/">http://www.wiredminds.com/</a>   |
| 130 | World Market Watch, Inc. | novel visualization of overall traffic | VisitorVille    | <a href="http://www.visitorville.com">http://www.visitorville.com</a>   |
| 131 | Wynsoft Systems Ltd.     |  | FastStats       | <a href="http://www.wynsoft.co.uk/Products/FastStats/index.htm">http://www.wynsoft.co.uk/Products/FastStats/index.htm</a> |
| 132 | Zeducorp                 | Web-Site-Tools Dot Com                 | SuperStats      | <a href="http://www.web-site-tools.com/superst.htm">http://www.web-site-tools.com/superst.htm</a>                         |
| 133 | ZY Computing, Inc.       |  | 123 LogAnalyzer | <a href="http://www.123loganalyzer.com">http://www.123loganalyzer.com</a>   |

**APPENDIX A-2: Table 2: Pricing and Support times (Marketing Sherpa, 2006)**

| Rank | Company                          | URL                         | Clients<br>(Feb '06) | Pricing   | Support<br>Wait Times       |
|------|----------------------------------|-----------------------------|----------------------|-----------|-----------------------------|
| 1    | Core Metrics                     | www.coremetrics.com         | 600                  | Mid-level | Within 2 hours              |
| 2    | Omniure, Inc                     | www.omniure.com             | 912                  | High-end  | Instantly /<br>Under 60 min |
| 3    | Instadia                         | www.instadia.com            | 400                  | High-end  | Within 2 hours              |
| 4    | WebTrends, Inc.                  | www.webtrends.com           | 10 000               | High-end  | Instantly/<br>Under 60 min  |
| 5    | Intellitracker                   | www.intellitracker.com      | 60                   | Economy   | Within 2 hours              |
| 6    | Manticore Technology             | www.manticoretechnology.com | 35                   | Mid-level | Within 2 hours              |
| 7    | Unica Nettracker                 | www.unica.com               | 10 000               | Economy   | Within 2 hours              |
| 8    | Flowerfire, Inc                  | www.sawmill.net             | 3 523                | Mid-level | Within 24 hours             |
| 9    | Google Analytics                 | www.google.com/analytics    | 0                    | Free      | Within 24 hours             |
| 10   | World Market Watch, Inc          | www.visitorville.com        | 3 691                | Mid-level | Instantly/<br>Under 60 min  |
| 11   | Clicktracks Analytics, Inc       | www.clicktracks.com         | 5 000                | Economy   | Same day                    |
| 12   | Clicktracks                      | www.clicktracks.com         | 1 000                | Economy   | Same day                    |
| 13   | Clicktracks                      | www.clicktracks.com         | 1 000                | Mid-level | Same day                    |
| 14   | Clicktracks                      | www.clicktracks.com         | 35                   | High-end  | Same day                    |
| 15   | Clicktracks                      | www.clicktracks.com         | 150                  | Mid-level | Same day                    |
| 16   | Net Applications                 | www.hitslink.com            | 141 000              | Economy   | Same day                    |
| 17   | Maxsi, LTD                       | www.evisitanalyst.com       | 400                  | Mid-level | Instantly/<br>Under 60 min  |
| 18   | Websidestory                     | www.websidestory.com        | 900                  | High-end  | Instantly/<br>Under 60 min  |
| 19   | WebtraffiQ                       | www.webtraffiQ.com          | 300                  | Mid-level | Within 24 hours             |
| 20   | Clickalyzer, Inc                 | www.clickalyzer.com         | 300                  | Mid-level | Same day                    |
| 21   | Clickalyzer, Inc                 | www.clickalyzer.com         | 50                   | Mid-level | Within 48 hours             |
| 22   | Metriserve Web analytics         | www.metriserve.com          | Unknown              | Economy   | Within 24 hours             |
| 23   | Thinkmetrics                     | www.thinkmetrics.com        | 268                  | Mid-level | Within 2 hours              |
| 24   | Opentracker                      | www.opentracker.net         | 2 000                | Economy   | Same day                    |
| 25   | Watchwise, Inc                   | www.watchwise.net           | 2 190                | High-end  | Instantly/<br>Under 60 min  |
| 26   | Viewmark, Inc                    | www.viewmetrix.com          | 14                   | Mid-level | Instantly/<br>Under 60 min  |
| 27   | Engine Ready Software            | www.ConversionAnalyst.com   | 600                  | Economy   | Within 2 hours              |
| 28   | 24/7 Real Media                  | www.247realmedia.com        | 60                   | Mid-level | Same day                    |
| 29   | Auriq systems, Inc               | www.auriq.com               | 150                  | High-end  | Same day                    |
| 30   | Shaun Inman Design & Development | www.haveamint.com           | 2 788                | Economy   | Same day                    |
| 31   | SIPR for Mondosoft               | www.mondosoft.com           | 2 400                | Mid-level | Same day                    |
| 32   | SIPR for Mondosoft               | www.mondosoft.com           | 200                  | Mid-level | Same day                    |
| 33   | Maxamine, Inc                    | www.maxamine.com            | 260                  | High-end  | Same day                    |
| 34   | Nedstat                          | www.nedstat.com             | 900                  | Mid-level | Same day                    |
| 35   | Fireclick                        | www.fireclick.com           | 200                  | Mid-level | Same day                    |
| 36   | Cidex computer systems           | www.visitour.com            | 15                   | Economy   | Same day                    |
| 37   | Clicklab                         | www.clicklab.com            | 60                   | High-end  | Within 48 hours             |
| 38   | Loyalty Matrix, Inc              | www.loyaltymatrix.com       | 10                   | Economy   | Same day                    |
| 39   | [x+1]                            | www.xplusone.com            | 20                   | High-end  | Instantly/<br>Under 60 min  |

**APPENDIX A-3: Vendor comparison – Table 3: Pricing and cost information (E-consultancy, 2008)****Amethon Solutions**

There are three main components to pricing:

One-off implementation and configuration fee.

Monthly software license fee based on the total number of page impressions during the month.

Monthly hosting fee (if applicable)

The monthly software license fee is based on a tiered volume model and starts at £125/\$250 per month for up to 1 million page impressions. Basic user and system administration training is provided as part of the implementation and configuration fee. Consulting is available on request.

**AT Internet**

AT Internet use a volume-based monthly subscription fee which is based on the number of analysed pages. The volume-based model enables clients to control budgets. The monthly subscription fee is calculated with an estimated number of analysed pages as well as the optional modules required.

Services pricing is available on request

**Coremetrics** Subscription-based pricing model, with implementation services fee (one-time fee) and monthly services fee based on millions of monthly server calls. Implementation training and support (one-time fee): approximately £6,000.

Monthly service fee ranges from £3,000 - £25,000, based on service calls. Add-on applications, strategic consulting and additional training are priced separately.

**DC Storm**

Licenses are issued according to monthly page views/impressions.

Licenses start from as little as £125 pcm.

Up to 25K page views a month starts at £650 pa. Higher volume licenses are charged monthly or annually. Training Courses are £359 per day.

One-hour free integration per site. StormAPI™ is inclusive of monthly fee. Google API charges are passed on at cost.

### **eVisit analyst**

A number of cost options are available including outright license and monthly fees. The typical model is a monthly license fee with costs based on data storage (i.e. total Website traffic).

Technology and service costs depend on the eVisit Analyst solution selected; costs for our standard service start from as little as £35 per month. Pricing for eVisit Analyst Advantage is available on request, and is dependent on the number of domains tracked and Website traffic levels.

Every eVisit Analyst solution offers unlimited user access, and total customer care, support and maintenance is included as standard. Telephone training and support is included as standard. There may be additional costs for onsite consultancy and training.

### **Facilitate Digital**

Pricing is based on usage – a tiered structure based on volume of monthly impressions.

Based on a monthly fee that starts at £100 per month.

### **Google Analytics**

Google Analytics is free to users. Urchin costs \$2,995 for a one-off license fee. Urchin has a one-off fee, and is thereafter hosted and managed in-house.

Implementation and consultation is optionally outsourced to Google– The price for Analytics Authorised Consultants will vary.

**IndexTools**

IndexTools is now free to current customers. Yahoo! has yet to announce a new access and pricing plan.

**Intellitracker**

Pricing model is based on the number of recorded actions within a given time period (generally monthly). In most cases this is the same as the number of page views.

Entry level Intellitracker Enterprise pricing start from £300 per month up to and including 1 million recorded actions. Price plans exist for 3, 5, 10, 25, 50, 100, 250, 500, 1000 and 2500 million recorded actions per month.

Bespoke consulting, integration or custom configuration work outside of the highly intuitive and powerful report building options are charged at between £400 - £1200 per day based on the grade of staff.

**iPerceptions**

Subscription model is based on an annual fee. Consulting and analyst time can be purchased with a subscription.

**Lynchpin**

Methods of charging include project fee or monthly retainer.

Companies' requirements differ, please contact us for costing based on your current situation. Bespoke consultancy work is priced on individual client specifications.

**Marketwave**

Primarily perpetual license model with annual support and maintenance renewal as the recurring cost. Subscription licensing is available if preferred; this is primarily based on the number of users using logins, so if multiple users use a single login this counts as a single user.

Traffic-based licensing is also available as an alternative so that the most cost effective option for the individual client can be offered.

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Personal (single user) edition (limited to up to 25,000 page views per day) £5,500

5 user edition £11,000 (unlimited traffic)

10 user edition £15,000 (unlimited traffic)

Additional users 11 – 50 £550, 51-100 £330

### **Nedstat**

Annual subscription fee for Sitestat and optional modules 'Stream Sense™' and 'eCommerce'.

*In addition (or alternatively for high traffic Web sites):*

Traffic / Server calls per million

Standard Sitestat subscription includes 12 million server calls, LIVE SEGMENTATION, unlimited user logins, Office Link™, Direct View™, Access to API, SSL viewing, on-the-fly language switch, Sitestat toolbar, free upgrades and new versions, Sitestat introduction session, Personal helpdesk.

Consultancy based on day rates. Nedstat Academy based on price per person per training.

### **Nielsen Online**

Rate card based on monthly page impressions. Training and services are included in the ASP cost model. Training and support is included in the package.

### **Omniture**

Cost structure is based on the number of onsite actions tracked, processed and stored. This known as the CPMM rate (cost per million), and is charged monthly. There are additional capabilities available from the Omniture platform which are priced accordingly. Costs vary based on anticipated number of page views per year. Service pricing available on request.



**RedEye**

Clients pay a monthly retainer to cover database, data base administrator, analytics consultancy and product licenses. Extras such as email transmissions and banner impressions are charged on a per thousand basis and additional consultancy and account management is charged at an hourly rate.

Also offering a new payment method for many elements of its services whereby it works to agreed results and service level agreements (SLAs) to ensure payment when results are delivered.

Price of building databases starts at £1,750 per month, allowing for additional functionality and cost as required. Analytics consultancy, email delivery, usability consultancy, customer relationship management (CRM) strategy, trigger email priced separately.

**Site Intelligence**

A VBIS system can be funded in a number of ways, including a one-off license fee. The license fee payable depends on the number of individuals who will use each of the VBIS application.

Another method is quarterly based Rental of the VBIS system, where exact license requirements are implemented in the normal way and then billed as a quarterly charge.

The minimum rental period is 12 months and you may purchase the system at any point after this period, or continue with the monthly rental scheme.

Enhanced support packages are available which provide flexible extended hours support, report generation and interpretation, agency negotiation, training, etc.

Consultancy and training is charged at a prevailing day rate on a time and materials basis.

**Speed-Trap**

ASP service – monthly charge including software, support, hosting, reporting etc.

License - annual charge. License and ASP costs based on traffic through monitored sites.

ASP prices start from £2500 a month. Standard training courses from £500/person/day.

**TagMan**

Based on number of tag calls. (i.e. Page impressions).

Starts at £1,000 pcm for 5m tag calls. Tag calls can be limited for clients who use TagMan for data

**Unica**

Industry standard pricing model is based on monthly volume of page events on the Web site. Unlike many Web Analytics solutions that charge add-on fees for functionality such as ad hoc reporting, data warehousing, additional reports, etc.

Unica's Affinium NetInsight provides a single price for complete functionality.

Bespoke customer services for implementation, auditing, education, and best practices are priced based on the desired scope of the engagement.

**WebAbacus**

Hosted / ASP offering starts from £3500 pa. Licensed offering starts from £7000 + 20% annual maintenance (in year 2 onwards) or via rental from £2750 per annum. Typical licensed implementation project would be in the region of £15-30k.

Services are based on day rate consultancy services which are discounted to retain consultancy. Day rates from £800 per day. We provide a wide range of consultancy services designed to enable organisations to maximize ROI via data driven decision making.

Additionally run training courses for technology (4 courses from basic to system analyst) and wider analytical courses.

**WebTrends**

Pricing is dependent on individual customer requirement.

**WiredMinds**

ASP charges are quoted as a monthly fee and charged annually to minimise administration. Licenses are charged as one-off license fee with annual support.

License Source: For major technology businesses and OEMs – a source license can be purchased to allow customers or partners to build their own solution on WiredMinds technology – Ts and Cs apply.

ASP costs start from £200 per month for 1 million page impressions per month, to £1,200 per month for a dedicated server installation. Support, updates and upgrades are included in the price.

License pricing is available on request, starting at £11,350: can track multiple domains and can be re-sold as a partner service.

Support and updates at 15% per annum.

Consulting services @ £700 per day.

Training and project management – tailored to requirements.

Custom Dashboards from £1,400 per user.

**APPENDIX A-4: Vendor comparison – Table 4: Key decision criteria**

| Globally   | United Kingdom   | South Africa  |
|--|--|---|
| Research done by Terry Lund, MarketingSherpa, Gartner            | Econsultancy: UK   | University of Cape Town   |
| Method of delivery (software or hosted service)                  | Analysis of capabilities (services / products)                               | Usage of Web Analytics solution in SA (Clients based in SA)                                   |
| Ease of use  | Clients  | Interviews with Resellers / Service Providers   |
| Real-time reporting latency                                      | Experience (qualifications / trade bodies / case studies / client lists)     | SA status (a SA office is preferred, occasional exceptions are made)                          |
| Segmentation   | Expertise (by sector / topic)  | SA based Implementation Team, Support Team and Training Team (occasional exceptions are made) |
| Customization (reports, dimensions and metrics)                  | UK status (a UK office is preferred, occasional exceptions are made)         | Awards of Resellers / Service Providers   |
| Integration with back-office systems                             | Ability to take on and fulfill new projects                                  | Contribution to Web Analytics Publications  |
| Training   | Recommendations from trusted sources (or anecdotal evidence to the contrary) | International recognition and presence  |
| Support and professional services (Including support wait times) | Google visibility  | Company Web site  |
| Cost and cost scalability  | Business model (a high % of turnover should be related to these services)    | Time to respond to correspondence   |
| Company stability  | Company Web site   | Feedback from a global Web Analysts network   |
| References   |  |   |
| Underlying technology  |  |   |
| Evolving products  |  |   |
| Offerings of Web analytics vendor                                |  |   |

## **APPENDIX B: INTERVIEW QUESTIONS**

### **Questions to organisations that have adopted and implemented Web Analytics**

#### **Questions for the first team member of the Online Team**

1. What is your role at your company and in which department are you?
2. Who are the people involved in Web Analytics at your company and what is their role?
3. How should the people involved in Web Analytics conduct their roles?
4. How is success in Web Analytics recognised at your company?
5. How do Web Analytics users define the success of Web Analytics?
6. Why is the success defined like that?
7. How should it be defined?
8. What are the benefits of adopting and implementing Web Analytics at your company?
9. What are the challenges of Web Analytics?
10. How are challenges defined?
11. Why are they defined like that?
12. What is Web Analytics adoption?
13. Why is Web Analytics adoption defined like that?
14. Why do some organisations resist the adoption of Web Analytics?
15. What are the Web Analytics adoption challenges?
16. What is the current practice of adopting and implementing Web Analytics at your company?
17. Why is the current practice the way it is?
18. What is the current practice in UK?
19. How should the current practice be?
20. How should the challenges / disadvantages in Web Analytics be minimised or overcome?
21. How should senior management be motivated to adopt Web Analytics?
22. What are the demands for facilitating Web Analytics:
  - a. from your organisation?
  - b. from the people directly involved in Web Analytics?
23. How should the demands for facilitating Web Analytics be managed?

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**Questions for the second, third, fourth, fifth and sixth team member of the Online Team**

1. What is your role at <<name of the primary health organisation>> primary medical insurance organisation and in which department are you?
2. Who are the people involved in Web Analytics at <<name of the primary health organisation>> primary medical insurance organisation and what is their role?
3. How should the people involved in Web Analytics conduct their roles?
4. How is success in Web Analytics recognized at <<name of the primary health organisation>> primary medical insurance organisation?
5. Why is the success defined like that?
6. How should it be defined?
7. How should it be defined?
8. What are the benefits of adopting and implementing Web Analytics at <<name of the primary health organisation>> primary medical insurance organisation?
9. What are the challenges of Web Analytics?
10. Why are they defined like that?
11. Why is Web Analytics adoption defined like that?
12. Why is Web Analytics adoption defined like that?
13. Why do some organisations resist the adoption of Web Analytics?
14. What are the Web Analytics adoption challenges?
15. What is Web Analytics implementation?
16. How should Web Analytics be implemented in a primary health insurance environment?
17. What are the Web Analytics implementation challenges?
18. What is the current practice of adopting and implementing Web Analytics at <<name of the primary health organisation>> primary medical insurance organisation?
19. What are the challenges in the current practice?
20. How should the current practice be?
21. What is the current practice in UK?
22. How should the challenges / disadvantages in Web Analytics be minimised or overcome?
23. How should senior management be motivated to adopt Web Analytics?
24. What are the demands for facilitating Web Analytics:
  - a. from <<name of the primary health organisation>> primary medical insurance organisation?
  - b. from the people directly involved in Web Analytics?
25. How should the demands for facilitating Web Analytics be managed?

---

**Questions for the seventh team member of the Online Team**

1. What is your role at <<name of the primary health organisation>> and in which department are you in?
2. Who are the people involved in Web Analytics at <<name of the primary health organisation>> and what is their role?
3. How should the people involved in Web Analytics conduct their roles?
4. How is success in Web Analytics recognised at <<name of the primary health organisation>>?
5. How do Web Analytics users define the success of Web Analytics?
6. Why is the success defined like that?
7. How should it be defined?
8. What are the benefits of adopting and implementing Web Analytics at <<name of the primary health organisation>>?
9. What are the challenges of Web Analytics?
10. Why are they defined like that?
11. What is Web Analytics adoption?
12. Why is Web Analytics adoption defined like that?
13. Why do some organisations resist the adoption of Web Analytics?
14. What are the Web Analytics adoption challenges?
15. What is the current practice in UK?
16. How should the current practice be?
17. How should the challenges/disadvantages in Web Analytics be minimised or overcome?
18. How should senior management be motivated to adopt Web Analytics?
19. What are the demands for facilitating Web Analytics:
  - a. from <<name of the primary health organisation>>?
  - b. from the people directly involved in Web Analytics?
20. How should the demands for facilitating Web Analytics be managed?

## APPENDIX C: ONLINE MI STEERING COMMITTEE SUMMARY

The weekly Online Management Information Steering Committee Summary consisted of quantitative data reported on under the following sections and it had a commentary page which highlighted why the quantitative data had the values it had for that week:

### 1. Online Visits

- Total Unique Visits
- Total Visits
- Gateway Page Visits
- Sales Page Visits

### 2. New Business Activations for an Individual who comes directly

- Applications Received
- Applications Not Taken Up (NTUs)
- Cancelled Application
- Activated Applications
- Outstanding Applications

### 3. Call Centre and Service Desk

- Total calls for the Week
- Number of Online Calls
- Percentage of Online Calls
- Online “Contact Us” Queries

### 4. Digital Welcome

- New Registrations
- Individual light packs sent (E-mail digital welcome pack)
- Individual full packs sent (Printed and posted welcome pack)
- Group light packs sent (E-mail digital welcome pack)
- Group full packs sent (Printed and posted welcome pack)
- Unique text messages sent
- Total text messages sent

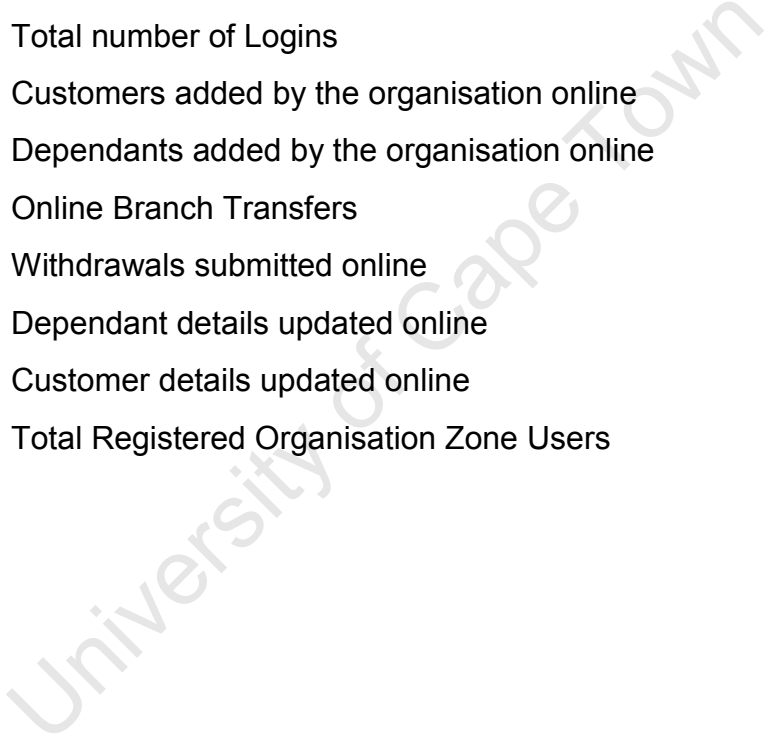


- 
- E-mail Addresses Created or Updated
  - Active Policies with E-mail Addresses
5. Digital Servicing
- Claims statements sent to the Inbox
  - Claims statements viewed via the Inbox
  - Individual renewal packs e-mailed
  - Individual renewal packs printed
  - Individual renewal packs viewed online
  - Small Medium Enterprise (SME) renewal packs e-mailed
  - SME renewal packs printed
  - SME renewal packs viewed online
  - Corporate renewal packs e-mailed
  - Corporate renewal packs printed
  - Wellness Payments
6. Online Customer Engagement
- Unique Logins
  - Claims Pre-authorisation
7. Online Wellness Engagement
- Unique Visits
  - Total Wellness Reviews (WR) Completed
  - Unique WRs completed in a Current Policy Year
  - Wellness Points Plan Visits
  - Goals Setup
  - Goals Completed
  - Goals Expired
  - Discount Supplier1 Activations
8. Channel Wellness Engagement (includes Online/Call Centre/ Suppliers)
- Discount Supplier2 Activations
  - Fitness Activations
  - Discount Supplier3 Activations
-

9. Online Advisor Engagement

- New Registrations
- Unique Logins
- Quotes Submitted
- Applications Submitted
- Usage Percentage of Registered Base

10. Online Organisation Engagement

- New Registrations
  - Unique Logins
  - Total number of Logins
  - Customers added by the organisation online
  - Dependants added by the organisation online
  - Online Branch Transfers
  - Withdrawals submitted online
  - Dependant details updated online
  - Customer details updated online
  - Total Registered Organisation Zone Users
- 

## APPENDIX D: MEMOS

The following are the memos that were written:

- Memo 1 after the first interview with Member 1 in a company that has adopted WA

After the first interview, I picked up from the reaction on Respond AA1 that the set of questions was too long for this particular research environment, because it is a small team and a small and medium enterprise who are striving to work on many projects in a high paced environment. Therefore there is a requirement to work under pressure in this context. Some questions that were planned to be asked were not asked due to being repetitive and Respondent AA1 did not understand some subtle differences, for example, the difference between WA 'adoption' and WA 'implementation'. Most of the people in corporate organisations, especially in the company for the study, are busy and may not want to make time for research interviews; therefore in this context, it is wise to have 30-45 minute interviews instead of 1 hour interviews. Respondent AA1 seemed to be in a rush even though she did not communicate that. The original set of question was changed for the next interview (please see Appendix). Analysis was done after the first interview and a memo was written. In the full transcripts the full name of the organisation has been replaced with 'company'. In the full transcripts the sector in which the company is in has been replaced with 'sector'. The name of the person being interviewed has been withheld. The names of co-workers have been mentioned in full transcripts; however they are withheld in analysis and are not mentioned in the thesis. Question number ten & seventeen were removed because Respondent AA1 did not seem to understand them and they seemed difficult to answer.

- Memo 2 after the second interview with Member 2 in a company that has adopted WA

Important questions were covered in a shorter time frame with Respondent AA2. Respondent AA2 was clear in most of his answers. Respondent AA2 was relaxed and focused on the interview.

Respondent AA2 portrayed experience and knowledge in Web Analytics. Questions fifteen (15), sixteen (16) and seventeen (17) were added to find out whether the Online Team understood the difference between 'WA adoption' and 'WA implementation'.

- Memo 3 after the third interview with Member 3 in a company that has adopted WA

Important questions were covered in a shorter time frame, because Respondent AA3 asked to skip some questions and he was not sure how to answer some questions. Respondent AA3 was guessing some answers, repeating some questions and started some answers with: 'I do not know'. Respondent AA3 was not focused on the interview, and he also briefly checked the Internet during the interview. Respondent AA3 portrayed lack of knowledge about issues that were not technical in WA. Respondent AA3 was interested in questions that seemed to be technical or close to being technical. Even though Respondent AA3 agreed to do the interview; he did not show interest in questions that were not technical, sometimes asking whether he could skip questions or briefly checking the Internet during the interview.

- Memo 4 after the fourth interview with Member 4 in a company that has adopted WA

Respondent AA4 answered the questions in depth, because he has been with the organisation for more than five years. Even though Respondent AA4 was knowledgeable about most questions, he was guessing some answers, repeating some questions and started some answers with, 'I do not know'. Respondent AA4 felt that the interview was getting long and asked after question seventeen, 'Are we done now?'

Respondent AA4 portrayed sufficient knowledge about WA, trends in the industry and about the business environment. Respondent AA4 showed some passion and interest in assisting with changing interventions in the business unit. Respondent AA4 showed some critical thinking and innovation, because he challenged why WA is called WA. He suggested some alternative names to call Web Analytics.

- 
- Memo 5 after the fifth interview with Member 5 in a company that has adopted WA

Respondent AA5 answered the questions in depth, because he was knowledgeable about his role and how it impacted on WA. Respondent AA5 was generally knowledgeable about all questions, and he was confident about his responses. Respondent AA5 was guessing some answers, repeating some questions and started some answers with:

'I do not know...'

Respondent AA5 portrayed limited knowledge about WA, trends in the industry and about the business environment within her role. Respondent AA5 showed some interest in learning and training in order to improve as a business unit.

- Memo 6 after the sixth interview with Member 6 in a company that has adopted WA

Respondent AA6 answered the questions pertaining to his own role in depth, because he has been with the organisation for a reasonably longer time than some respondents. Respondent AA6 was guessing some answers, repeating some questions and started some answers with:

'I do not know...'

Respondent AA6 was comfortable about the length of interview time. He paced his answers appropriately and accordingly. Respondent AA6 portrayed sufficient knowledge about WA, trends in the industry and about the business environment. Respondent AA6 showed some passion and a sense of ownership regarding WA in the business unit. Respondent AA6 showed some critical thinking and innovation, because he said that he would prefer not to use the word 'Analytics' in WA. He reckoned that WA was just a tool to produce insights. He preferred emphasising the value WA provides. Respondent AA6 emphasised the importance of having a WA team with various roles to implement and maintain WA.

- Memo 7 after the seventh interview with Member 7 in a company that has adopted WA

Respondent AA7 thought that most of the WA questions were technical, therefore coming from a different team (either than the Online); she assumed that she may not have been able to answer some questions. Respondent AA7 was under the impression that she had answered questions that she had not answered nor even had she addressed the point in the question. Respondent AA7 felt that the interview was getting long and it seemed as if she did not want to answer most of the questions, even though she was told initially that she was not obliged to do the interview if she did not want to do it. It seemed as if she wanted to express her frustration when she said that she has never seen regular reporting. There was one lengthy report that she requested and it was not approved by senior management and that was what she thought she required. Respondent AA7 portrayed limited knowledge about WA, trends in the industry and about the business environment. Respondent AA7 showed little interest in WA and in WA interventions in the organisation. This was the shortest interview out of interviews conducted in this organisation. Questions twelve, thirteen, fourteen, sixteen and seventeen were omitted from interview questions, because the interviewee showed little interest in the interview; she also did not understand other previous questions.

- GENERAL MEMO

After each interview, analysis had to be done. Several iterations of analyses were done after interviews had been individually analysed. The themes, codes, concepts, categories, main categories, core categories and links are based on data sources and participatory observations. Initially there were 88 categories - illustrated under the 'Themes' tab under 'Categories' on the MS Excel spreadsheet. More cyclical analysis (using the method of constant comparison) was done to streamline categories. The categories were refined to nineteen 'Main categories'. The 24 problems that were identified are analysed further using the action research cycle. Some of the problems were grouped according to similarity and relativity. Some of the problems we categorised according to conflicting ideas. More iterative analysis was done and the nineteen main categories were collapsed into seven core categories. More cyclical analysis was done and the twenty identified problems were collapsed into twelve problems. Links were formulated from the seven core categories. Action research analysis was done for the collapsed twelve problems.

## **APPENDIX E: THE RESEARCHER'S EXPERIENCE IN ANALYTICS AND INFORMATION TECHNOLOGY**

I hereby confirm that I have worked in the corporate sector and in academia. I have been actively reading and writing Web Analytics peer-reviewed research papers and industry publications. I have been an active member of Web Analytics Association (WAA) since 2005. I have also completed an Introduction to Web Analytics Online Course through the University of British Columbia (UBC) and passed with 98%. I worked as a Digital Analyst/Digital Business Intelligence Manager for a UK-based joint venture. I have pioneered an organisation called FlavaLite Innovations with three partners as a Director offering Web Analytics services and online tickets for events (in partnership with Webtickets). I have worked for a registered financial service provider as an Information Technology (IT) Programme Business Analyst and later on as an Online Business Analyst. I have worked for an international online marketing company as an Online/Web Analyst. I did some freelance Web Analytics project for a search engine optimisation organisation that is based in Cape Town and has international presence. I have used more than three Web Analytics software packages in practice. I have used Web Analytics benchmarking tools. I have a substantial understanding of search engine optimisation (SEO) and search engine marketing (SEM).

I worked for another registered financial services provider as a Systems Analyst. I am completing a PhD in Information systems at the University of Cape Town. I have completed my Masters degree in Information Technology majoring in E-business, Information & Knowledge Management and E-commerce on the subject of "E-commerce adoption barriers in SMMEs in the Tourism sector". I have worked for Increase Network Solutions in Holland as a Programmer. I have been lecturing Information systems, System analysis and design and networking for four years. I lectured Research Methodology (practical sessions) to BTech: IT students. For the Research Methodology course, I was a study leader for seven BTech students.

I have participated in consultative conferences and leadership workshops for NACI (National Advisory Council on Innovation) and SET4W (Science, Engineering and Technology for Women). SET4W advises the Minister of Science and Technology on matters pertaining to women in SET (Science, Engineering and Technology). SET4W has over the past two years commissioned research in South Africa on this issue. The consultative initiatives culminate in a gender equity policy for the SET sector, providing the basis for progress in mainstreaming gender issues within Science, Engineering and Technology. I have volunteered as an IT specialist at the Provincial Government Information Technology Office (PGITO), Premier's office, in Bhisho during Technikon recess. I assisted with compiling ICT related policies.

I have been involved in Community Informatics (social appropriation of IT) research in the Faculty. Tutors and I lecture IT skills, for example MS PowerPoint, Access, Excel, and Word to the Malmesbury correctional services Group of Hope. I have an excellent ability to communicate professionally at a high level with the public and staff (verbally and in writing). I have presented research output provincially, nationally and internationally. I have the ability to handle a high volume of work. I have the ability to work under pressure. I am a creative team player who can perform tasks strategically, systematically and accurately. I have excellent verbal and written communication skills in three of the official languages of the Western Cape Province. I can demonstrate the ability to use information technology software.

I have completed a program by Innovation Hub and Maxum in collaboration with the University of Baltimore in the United States of America (USA) for a developmental program for Women in ICT. I have done some research on Innovation and Web Analytics at Google Incorporated, at Silicon Valley in San Francisco. I was welcomed the second time at Google Incorporated for further research in Web Analytics. I have been invited by Ryerson University in Canada by the Institute for Innovation and Technology Management in the area of Internet Analytics and have successfully completed the visit in 2009. I have been nominated as Information systems PhD Student on an exchange program to Finland by the South African and Finnish Partnership in ICT and Innovation. I completed the exchange program successfully.



# Case IN POINT

## UNTANGLING WEB-BASED TOOLS FOR SALES

The power of the Internet has yet to reach much of the South African economy, but Shongieni Dedeke is working on ways to make country's small and medium-sized businesses understand the Web's potential—and how they can use it to their advantage. She is the director of the South African Chamber of Commerce and Industry's (SACCI) e-commerce program.

Shongieni's Public Information Systems Program is a web-enabled, one-to-one service that provides business owners with qualitative and quantitative data on which they can make the online activity of their customers, and identify potential new customers through online marketing activity and social media. She has determined to educate business people on the free tools out there—so many small companies pay unnecessary fees to agencies for services that they could find on the Internet cheap. It's all about educating small business how to use the Internet to the best advantage.

While the bulk of the South African population may not have access to personal computers, Shongieni points out the high penetration of cellphones in our society. It's also important for business owners to optimize their online offerings to be suitable for access from cellphones and other mobile devices and sites.

Working with Ryerson University in Canada, Shongieni notes the potential global impact of the outcomes of her work. "Small businesses have been identified as the key drivers for economic recovery and the Internet has the potential to revolutionize small and business development. While it is the publishing my findings in the conference is an exciting, engaging with the public sector and media to reveal findings to the market so that more owners can make use of these tools now. The online world adapts and changes so quickly that it is important to spread the information as fast as possible."



(Haggard, K. 2009. Scarce skills development fund review: filling the gaps of a knowledge economy. *Wordsworth Report*, 2002/03 – 2008/09: 18)

## Business academy graduate wins top award (Louis Group International, 2010)



Flavalite Innovations announced today that they have won the top R100,000 prize in a competition sponsored by SAB KickStart. This prize is awarded for the best business plan and Flavalite will now be representing the Western Cape Region in the national competition in Gauteng in October 2011, where business practice and the implementation of the business plan will be measured. The objective of the award is to help promising new businesses become established and realise their potential.

Significantly, the founder and driving force behind Flavalite Innovations is a Louis Group Business Academy graduate, Sibongiseni Dakela. She saw a gap in the market for niche technological applications that create economic opportunities and add value, with Flavalite's two initial services targeting e-ticketing for events and advanced web analytics solutions.

"I was one of the initial class who attended the Business Academy and it inspired me with a personal vision to become an entrepreneur", says Sibongiseni, "It gave me an understanding of the framework of business and the value of building relationships. It taught me to see the "gold" in people.

## **APPENDIX F: REQUIREMENTS FOR A WEB ANALYTICS SOLUTION FOR ANALYTIX TRAILBLAZER INC.**

### **High Level requirements**

- A solution that meets all our internal security, technical and data requirements
- Data must be held internally
- A solution that is easy to implement and crucially easy to maintain (it will not take up lots of development time to implement/maintain)
- A solution that requires no tags – or tags that can be implemented once and done
- A solution that will allow us to go back in time and search for data, for example, if a business owner needs some data that was not defined initially, the solution will allow us to go and source the required information (without any developer involvement)
- A solution that ideally allows us to track individuals (not necessarily known individuals but must be more than aggregate view)
- A solution that will allow us to track/report on cross channel activity, that is, web/call centre/e-mail
- A solution that will allow us to identify prospect behaviour, and ideally traffic patterns in getting to site, and their behaviour over period of prospect to becoming member
- A solution that works with flash/flex
- A solution that allows us to track drop outs by field
- A solution that can map members behaviour and build picture of their behaviour
- A solution that can be potentially used by the call centre - in a way that it can show call centre agents what is happening now with this user on the site
- A solution that potentially will fit with any internal data mart, to give us a joined up view of the user
- A solution that will potentially allow UK user to log in and pull of their own data
- A solution that allows for reports to be set up and be automatically sent to stakeholders
- A solution that will allow for the production of data (as far as can be achieved automatically) as per the current weekly MI report, as a minimum
- A solution that can report %, that is, unique visit to quote started %
- A solution that is cost effective

## APPENDIX G: QUESTIONS FOR BUSINESS OWNERS AND WEB ANALYTICS EXPERTS



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Monday, 04 June 2012

### RE: INTERVIEW PARTICIPATION CONSENT FORM

One of the partial requirements for completing a PhD in Information Systems at the Department of Information Systems in the Faculty of Commerce at the University of Cape Town is the completion of a dissertation research project. The researcher, Sibongiseni Dakela, has chosen to perform a study entitled “Web analytics (WA) strategy: a model for adopting and implementing advanced Web Analytics”. The study will add valuable insights in the area of Web analytics, especially in the South Africa. The study will highlight practical issues with regards to the roles of people that are sometimes not clarified in an organisation adopting Web analytics.

An issue that is of utmost importance to the researcher, the department, the faculty and the University of Cape Town at large is research ethics. Consequently, the researcher guarantees the confidentiality and anonymity of the details and comments you provide, which will strictly be used for the sole purpose of the aforementioned research report.

Your participation in this study is entirely voluntary. You may choose to be excluded from the study at any point in time. If you choose to be involved with this research project, please sign the consent form below.

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#### PARTICIPANT CONSENT FORM

By signing this participant consent form, you are agreeing to participate in this research project. Should you wish to contact the researcher for any reasons whatsoever, please do not hesitate.

Contact Name: \_\_\_\_\_

Signature: \_\_\_\_\_

Date: \_\_\_\_\_

## Background information for Business Owners

Figure 1 is draft version towards the evolution of the model for this study. Any e-commerce organisation considering adopting and implementing Web Analytics, may consider the laying the foundation of these seven pillars in the model, namely: cross-functional management, knowledge management, qualitative and quantitative Management Information (MI), improved customer experience, beneficial and advanced Web Analytics, continuous innovation and building internal and external business relationships.

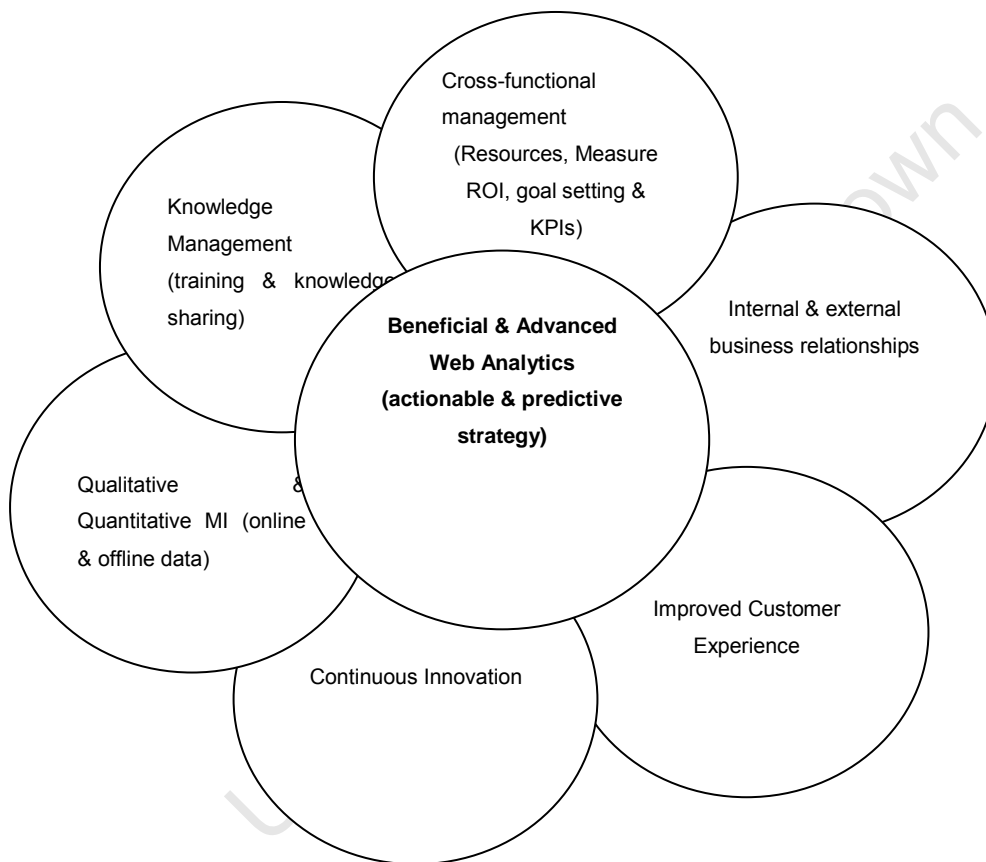


Figure 1 A simplified version of the proposed domain model (domain of the model)

Figure 1 is a domain of the proposed model for this study. It consists of seven themes that an organisation should be mindful of before adopting Web Analytics or themes to measure Web Analytics adoption. The seven themes are:

- **Beneficial and advanced Web Analytics.** This suggests actionable and a predictive strategy.
- **Cross-functional management.** This highlights the importance of measuring return on investment (ROI), goal setting and key performance indicators (KPIs).



- Knowledge management. This recommends training and knowledge sharing within the organisation.
- Qualitative and quantitative management information. Online and offline data are both important for analysis and interpretation of data to bring about valuable insight for decision making.
- Continuous innovation has to be explicitly planned and there should be time set aside to encouraging continuous innovation.
- Improved customer experience would be the result of understanding the customer data and understanding the feedback from customer survey, then react appropriately.
- Build (and maintain) internal and external business relationships that will add value to the overall digital strategy pertaining to Web Analytics.

Figure 2 below is a proposed process model derived from the domain model above. The solid concepts are defined in the domain model above and other concepts clarify how to implement Web Analytics in practice. It is important to note that if proposed changes are implemented, then there may be some impact on the sales.

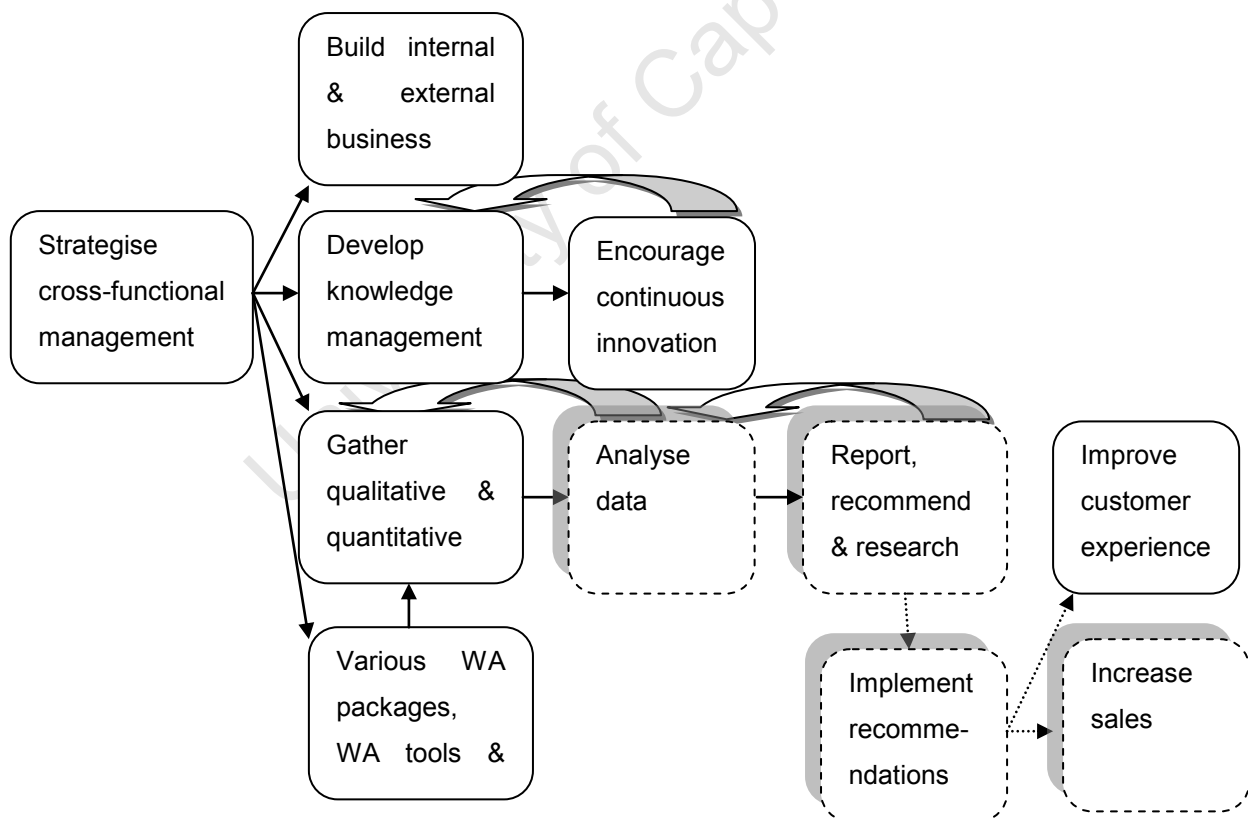


Figure 2 A proposed process model (from the domain of the model)

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Table 1 Twelve guidelines for adopting and implementing Web Analytics in an e-commerce organisation or a small medium enterprise (SME)

1. A knowledge management (KM) strategy may minimise the issue of lack of knowledge. A knowledge management strategy may consist of objectives, approach and plan, budget, benefits analysis, people, process, data and technology assessment, measurement and promoting the strategy. An organisational 'Wiki' that is updated regularly and employees who are given incentives may add value to the knowledge management (KM) strategy. A company would benefit from the knowledge management (KM) strategy.
2. A company may start by adopting and implementing free Web Analytics packages and tools based on their predetermined requirements. A pilot period may be defined to evaluate the Web Analytics solution based on their Web Analytics requirements.
3. Data collection and reporting methods need to be understood by a company before a decision is made whether 'to tag' or 'not to tag'. Advantages and disadvantages of data collection methods need to be evaluated based on the organisation's Web Analytics requirements. A decision may be made to use a suitable data collection method for the company.
4. A hosted solution is when data gathered by the Web Analytics package is stored by the vendor. When an organisation archives and stores their own data, they are then responsible for their own back-ups. Web Analytics packages that give clients an option not to have a hosted solution are usually commercial Web Analytics packages. In that case, an organisation should have an agreement about back-up procedures.
5. A company that is experienced in measuring online conversions in monetary terms is useful in monitoring sales figures and online customer experience. Such a company may assist in fully utilising Web Analytics packages and tools, so that ROI may improve.
6. Time management courses are recommended for individuals in the team who are struggling to prioritise learning how to use Web Analytics packages and tools. It is recommended that individuals who need to continue to learn about Web Analytics should schedule at least an hour a day to learn something about Web Analytics. It would be beneficial for junior/new personnel to learn more about Web Analytics from the company's experienced senior personnel.



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7. The Senior Change/Business Analyst, the Digital Analyst, the IT Architect and senior management should decide on the appropriate Web Analytics solution for their organisation based on the Web Analytics requirements. They should make their agreement based on how the short-listed vendors proposed to address the predetermined Web Analytics requirements.
  8. Simplify Web Analytics concepts by means of diagrams and giving examples related to the business in order to clarify Web Analytics concepts. A key responsible person should draw up simplified reports that are specific to the requestor's business needs.
  9. Quantitative data should be analysed qualitatively. Relationships should be built with business units that would provide qualitative analysis to supplement the statistics.
  10. Organisations should be aware of different systems that depend on each other and that may have an impact on the functionality of the Web Analytics packages and tools. Senior management and systems experts should ensure that different systems that exist are compatible with each other.
  11. Manual processes and crucial reports should be automated as much as it is feasible.
  12. I suggest a process where each person requests the reports that they need from a Digital Analyst using a formal application form with objectives and KPIs for the report. There would be a prioritisation and a sign-off step, so that each person may have the necessary reports in a negotiated time-frame.

The twelve guidelines above may be used by large organisations or SMEs considering to adopt and implement Web Analytics.

**Questions for Business Owners**

1. Please share your business profile and your business services?
2. What are your thoughts on the proposed domain model?
3. What are your thoughts on the twelve guidelines for adopting and implementing Web Analytics on an e-commerce Web site?
4. What are the benefits of these models and guidelines?
5. What value do these models and guidelines add for a company that is considering adopting and implementing Web Analytics?
6. Would companies offer a better customer experience to their clients because of applying these models and guidelines? Please substantiate your answer?
7. Would companies increase sales and become more profitable because of applying these models and guidelines? Please substantiate your answer?
8. Do you feel you could easily implement these models to utilise Web Analytics in increasing your profits? Please substantiate your answer?
9. Do you feel that these models are easy to understand? Please substantiate your answer?
10. Please give us any other general feedback that you may have?

***Thank you so much for answering the questions above for this phase of research.***

**Questions for Web Analytics Experts**

1. What is your work and educational experience regarding Web Analytics and related subjects within Information Systems?
2. What are your thoughts on the proposed domain model?
3. What are your thoughts on the twelve guidelines for adopting and implementing Web Analytics on an e-commerce Web site?
4. What are the benefits of these models and guidelines?
5. What value do these models and guidelines add for a company that is considering adopting and implementing Web Analytics?
6. Would companies offer a better customer experience to their clients because of applying these models and guidelines? Please substantiate your answer?
7. Would companies increase sales and become more profitable because of applying these models and guidelines? Please substantiate your answer?
8. Please give us any other general feedback that you may have?

***Thank you so much for answering the questions above for this phase of research.***

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## Glossary

**Advanced Web Analytics** - the monitoring and reporting of Web site usage so that enterprises can better understand complex interactions between Web site visitor actions and Web site offers to leverage insight to optimise the site for increased customer loyalty and sales.

**Business Intelligence (BI)** - the acquisition and use of information designed to improve competitive advantage.

**Decision Support System (DSS)** - an organised collection of people, procedures, software, databases, and devices used to support problem-specific decision- making.

**Electronic Business (E-business)** - can be divided into three categories mapping directly into the three strategic roles of Information Technology (IT) – inward, outward, and across:

- ❑ Business-to-employee: Intranet-based applications internal to a firm
- ❑ Business-to-consumer: Internet-based applications for a firm's customers
- ❑ Business-to-business: Extranet-based applications for a firm's business partners

**E-commerce (Electronic Commerce)** – any interaction between an organisation and its trading community undertaken in an electronic manner. It is a sub-set of electronic business and covers both intra and inter-organisational electronic messaging and information management

**Information systems (IS)** - inter-disciplinary field of scholarly inquiry, where information, information systems and the integration thereof with the organisation is studied in order to benefit the total system (technology, people, organisation and society).

**Innovation** – a new way of doing something.

**Key Performance Indicators (KPIs)** - metrics that allow business managers who are not directly involved with the operation of the Web site to understand if the Web site is contributing to the business' bottom line.

**Knowledge Management** – enables companies to use their data to determine best practices, retain the tacit knowledge of individuals, and classify expertise.

**Management Information System (MIS)** – is an organised collection of people, procedures, software, databases, and devices used to provide routine information to managers and decision- makers.

**Metrics** - the standards for measurement, providing target values that a company must achieve to reach a certain level of success.

**Problem** – issue or obstacle which makes it difficult to achieve a desired goal, objective or purpose.

**Programme change management** – process during which the changes of a system are implemented in a controlled manner by following a pre-defined framework / model with, to some extent, reasonable modifications while managing several related projects, often with the intention of improving an organisation's performance.

**Strategy (in IS)** - is a term that refers to a complex mixture of thoughts, ideas, insights, experiences, goals, expertise, memories, perceptions, and expectations that provides general guidance for specific actions in pursuit of particular ends within the computing environment.

**Virtual team** – members of a collective spread geographically while working together towards a common objective or objectives in a project.

**Web Analytics (WA)** - evaluative technique originating from and driven by the business world in its need to get more value out of understanding the usage of its Web sites and strategies therein. It is the measurement, collection, analysis and reporting of Internet data for the purposes of understanding and optimising Web usage.

**Web Analytics (WA) adoption** – access to a Web Analytics software, collaborating the functionality of the software with required management information while conducting core business transactions; delivering value to customers and to the business based on the decisions that are made using the Web Analytics package.

**Web Analytics (WA) implementation** – a post-sales process of guiding a client from purchase to use of the software. This includes Requirements Analysis, Scope Analysis, Customizations, Systems Integrations, User Policies, User Training and Delivery. These steps are often overseen by a Project Manager using Project Management Methodologies set forth in the Project Management Body of Knowledge. Software Implementations involve several professionals that are relatively new to the knowledge based economy such as Business Analysts, Technical Analysts, Solutions Architect, and Project Managers.